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A

SUCCINCT ACCOUNT

OF THE

CONTAGIOUS FEVER

OF THIS COUNTRY,

EXEMPLIFIED IN THE EPIDEMIC NOW PREVAILING IN LONDON;

WITH THE APPROPRIATE METHOD OF TREATMENT AS PRACTISED IN THE HOUSE OF RECOVERY.

TO WHICH ARE ADDED

OBSERVATIONS

ON

THE NATURE AND PROPERTIES OF CONTAGION,

TENDING TO CORRECT THE POPULAR NOTIONS ON THIS SUBJECT, AND POINTING OUT THE MEANS OF PREVENTION.

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PREFACE.

The histories of epidemical diseases constitute, perhaps, the most interesting portion of the records of medicine. For they are not occupied with mere questions of pathology; but they include the consideration of many circumstances, physical and moral, by which the rise, progress, and varying character of these formidable maladies are influenced. Their rise may be commonly traced to the operation of physical causes, being the result of climate and season; by which also their type is determined: and they are therefore but little under the control of human power. Thus, epidemics which assume a remittent form, are the products of marsh effluvia, or intense heat; while the continued fevers of more temperate latitudes appear after seasons of dearth, and extend especially du-

ring the autumnal heats. The propagation, however, as well as the character of these diseases is chiefly influenced by causes of a moral nature; or at least by such circumstances as the habits and institutions of man create; and which are therefore much within his own control. Whence, probably, the various modifications of plague, sweating-sickness, pestilential fever, &c. were occasioned, though originating under similar physical conditions, in respect to season and food. The character of an epidemic, therefore, is in some measure a test or index of the situation and circumstances of the population among which it occurs: and consequently an instructive lesson is contained in such records, as they demonstrate the powerful influence of those minor improvements in civilized life, which have been gradually adopted for the purposes of delicacy and individual comfort, in lessening some of the most fatal calamities to which mankind have been subject.

Independently of all other considerations, however, the fever which is now epi-

demic in this metropolis, and various other parts of the united kingdom, appears to be worthy of record, as it exhibits very distinctly a specimen of the common form, and of the common varieties which the infectious fever has assumed in this country for many years past; and which is likely to continue, under our improved and improving system of domestic œconomy, to be the ordinary fever of our island. Circumstances are perpetually recurring, which give it a local and partial existence, even when no general epidemic disposition prevails; so that it is important that its nature should be known, and that the most beneficial mode of management should be established. Our views upon this subject differ materially from those of our ancestors: but I have endeavoured to prove, that this difference is not altogether the result of changing hypotheses, or of what have been called the fashions of physic; but is in a great degree the necessary consequence of a change in the character of the malady itself.

A considerable stock of information, in-

deed, has been already accumulated relative to this subject, by the contributions of several contemporary writers: yet I am desirous of adding my mite of experience to the general fund. My attention has been necessarily directed for a series of years to the phænomena and management of fever; and the epidemic of the past year has been brought more immediately under my view than under that of any other individual. I am therefore disposed to take this opportunity, when retiring from my active duties, to the honorary appointment which the Governors of the Fever Institution have conferred on me, and while the impressions of recent observation are fresh in my memory, of recording the character of this epidemic as an example of the common fever of our climate, and of detailing briefly and practically the views of the method of treatment, which have been the ultimate result of my experience.

Possibly I may be condemned for having thus hastily promulgated these opinions in a concise form, instead of arranging them with more deliberation in an elaborate and

systematic treatise: but if we put aside all hypothetical speculations and controversial discussions, and confine our attention to points of real practical importance; to the symptoms and their changes; to the operation of the remedies which we employ; and to the appearances of organic derangement left by the disease, the subject is reducible within very narrow limits. The method of treatment especially, which is the great end and object of all medical inquiry, requires no extended detail, or elaborate elucidation. The progress in improvement, which a judicious practitioner will probably effect, will be to simplify his plans, to diminish rather than add to the number of his remedies, and to reduce his indications of cure to a few obvious principles. It appears to me, indeed, that fever is a disease, which particularly admits of this simplification of its treatment; the indications being generally less obscure than in many other diseases, and the operation of remedies clear, and often effective: whence this disease becomes the most interesting object of medical practice.

In detailing the means of cure, my endeavours to simplify the indications, and to connect more distinctly the symptoms with the remedies which they suggest, may have led me into some repetitions, which may be pardoned, if they contribute to perspicuity. But whether I have attained this object, or made any addition to the general information on the subject before me, must be left to the decision of the reader.

Bloomsbury Square,
August 1, 1818.

T. Bateman.

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A

SUCCINCT ACCOUNT

OF THE

CONTAGIOUS FEVER,

&c.

SECTION I.

INTRODUCTORY.

THE history of all nations affords abundant evidence of the constant concurrence of dearth and pestilence. The pestilence appears to have generally assumed the character of a contagious fever, modified in its form, and more or less virulent and fatal, according to the circumstances under which it occurred *. In

* In the middle ages, when both dearth and pestilence were much more frequent, one species of epidemic appears to have assumed a more chronic, though a not less

those times and countries, in which, from the imperfect state of agriculture and the limited commerce with other nations, dearth became actual famine, and in which the insalubrious habitations, clothing, and habits of life contributed to aggravate and even to generate disease, the ravages committed by epidemic pestilence were most extensive and calami-

formidable character. By some writers it was called *Ignis sacer*, and *Feu St. Antoine*, and by the French, *Ergot*; having been epidemic in Sologne about the year 1650, and ascribed, not to the scarcity of food, which at that time occurred, but to a diseased state of the rye, which somewhat resembled the spur of a cock. This disease commenced with lassitude and debility, followed by torpor, swelling, and a sense of burning heat, and excruciating pains in the lower limbs, which then became shrivelled and dark, and at length gangrenous, and dropped off. There is every reason to believe, however, that even this epidemic was the result of starvation, or deficient nutriment, and not of diseased corn. For it is stated by one French writer, that it afflicted almost exclusively the lowest classes of the people, who, in order to avoid actual famine, were compelled to live upon a sort of bread made of the meal of acorns, of grape stones, of the roots of fern, and of other crude and unnutritious substances. (See a full and able history of the subject in the Mémoires de la Societé Royale de Médecine de Paris, tom. i. p. 260, by MM. de Jussieu, Paulet, Saillant, and the Abbé Tessier, who were nominated by the Society to investigate it.)

tous. We are probably indebted to the improvements of our own times in all the arts of life, so conducive to the prevention and mitigation of disease, for the comparatively innocuous character of the epidemic fevers which occasionally appear among us. A century and a half has elapsed since the last visitation of the plague in this country; and

Camerarius, indeed, positively asserts, that this gangrene was observed in the extremities of persons who had certainly not eaten any ergoted rye. (See Acad. Natur. Curios. cent. iv. obs. 82.) It appears, however, that another disease of a febrile and contagious character, but essentially different from the Plague and from common Typhus, and which was frequently epidemic during times of dearth, in various parts of Europe, in the fifteenth, sixteenth, and seventeenth centuries, has been also called *Ignis sacer*, &c., and ascribed to the ergot in rye, or to the mixture of other unwholesome plants, such as the *Raphania*, with the food. This disease is said to have begun with an intense heat, accompanied with a sense of *formication*, or of the creeping of insects over the skin (whence it has been called *Kriebel Krankheit* by the Germans), which was followed by acute pains of the limbs and general convulsions of the muscles; by which the patient was often carried off. The first account of this disease was published by the Professors of Marpurg; of which Gregorius Horstius has left us a Latin translation. (Opera, vol. ii. lib. viii. obs. xxii.) A similar account is given of the disease by Sennertus in his chapter, "De Febre maligna cum Spasmo." The

the putrid pestilential fevers of the preceding age have been succeeded by the milder forms of infectious fever, which we now witness. The one which I am about to describe, has arisen, like its predecessors, in a season of scarcity among that portion of the community who principally suffer under such a calamity, and whose situation and habits contribute to the nurture and propagation of the infection thus generated.

That deficiency of nutriment is the principal source of epidemic fever *, and that the

disease has also been described by Hoffmann (see Med. Rat. vol. ii. par. ii. cap. 9. sect. xvi.): and by Linnæus, under the title of *Raphania*. (Amœn. Academ. vol. vi.) For a more particular account of these epidemics, I beg to refer the reader to the articles ERGOT and IGNIS *sacer* in Dr. Rees's Cyclopædia.

* If the vague and contradictory accounts given by authors, of the *Sweating Sickness*, are to be credited, this fatal epidemic, which committed dreadful ravages in England in the fifteenth and sixteenth centuries, appears to be an exception to this fact. For it is said to have raged in seasons not remarkable for scarcity, and to have affected principally persons of condition and in high health. It was, however, like all the other epidemics of Europe, a disease of autumn, subsiding on the approach of winter; and has been surmised by some physicians to have originated from unwholesome food (see Willan on Cutaneous

circumstances just alluded to operate only as accessories in fostering and multiplying it, will scarcely admit of dispute. If it had not been already demonstrated, on the most copious evidence, that the mere accumulation of animal matter in a putrescent state is incapable

Diseases, part iv. p. 449, note). The first origin of it, however, appears to have been under circumstances extremely favourable to the generation of a malignant contagion. For it is said to have first appeared in the army of the earl of Richmond, afterwards king Henry VII., upon his landing at Milford Haven in 1485. This army consisted of foreign troops brought over in crowded transport vessels, who were described by a contemporary historian (Philip de Commines) as the most wretched he had ever beheld; collected, it is probable, from jails and hospitals, and buried in filth. The disease soon spread to London, where it raged from the beginning of August to the end of October. It broke out again in England in four different summers, viz. 1506, 1517, 1528, and 1551; continuing from three to five months. In the second and third of these periods it is said to have been extremely destructive, proving fatal in the course of three hours; extending its havock to many of the nobility, and carrying off, in many towns, half the inhabitants. In 1528, although it was less generally fatal, many of the courtiers of Henry VIII. fell victims to it; and that monarch himself was in danger. On its last visit, in 1551, its fatality was so great that in Westminster 120 died of it in a day; and among others the two sons of Charles Brandon, both dukes of Suffolk. In Shrewsbury, particularly, according to the testimony of

of generating fever*; yet the fact, that the closeness of the habitations of the poor, the uncleanliness of their persons, furniture, and apparel, and the accumulating filth in the lanes and alleys which they occupy, remain unchanged in all seasons, while epidemic fever

Dr. Caius, who resided in that city, 960 died within a few days. These circumstances, however, seem to indicate that the disease affected both rich and poor; for such a mortality, especially in a provincial town at that period, could scarcely have been confined to persons of condition. Indeed, from the account which the celebrated Erasmus gives, in a letter to the physician of cardinal Wolsey, of the domestic habits of the people of England in these days, and to which he ascribes the occurrence of the sweating sickness, we cannot doubt that a degree of uncleanliness, and even of filth, of which we have no conception in our times, even in the lowest degrees of life, prevailed. "The floors," he says, "are commonly of clay, strewed with rushes, which are occasionally renewed; but underneath lies unmolested an ancient collection of beer, grease, fragments of fish, spittle, the excrements of dogs and cats, and every thing that is nasty." Hentzner observes, that even the floor of the presence-chamber of queen Elizabeth, in Greenwich palace, "was covered with hay after the English fashion." And Hume remarks, as a proof of the meanness of the living in those days, "that the comptroller of the household to Edward VI. paid only 30 shillings a year for his house in *Channel Row*;" which was probably like most of the smaller streets of London unpaved, and containing accumulations of the fragments of victuals, and all

appears but rarely, and with long intervals of absence, is decisive against the supposition that the latter is engendered from such sources. In some crowded cities, indeed, in which poverty and want prevail more extensively and continually among the lowest classes of the

other filth, which was then habitually thrown into them. It cannot therefore be matter of surprise that these epidemics, however produced, should have extended themselves to the higher classes, who were by such habits exposed to those accessory causes of their propagation which are now confined to the dwellings of the poor. (See "A Boke or Conseill against the disease commonly called the Sweat or Sweating-Sickness, made by John Caius, Doctor in Physic," 1552, 12mo.; afterwards published in Latin, in 1556, under the title of "De Ephemera Britannica." See also a short account of it by lord Bacon in his History of Henry VII.; Cogan's Haven of Health; Erasmus, in "Epistola ad Carolum Utenhovium;" and Wierus "De Sudore Anglico.")

* See Dr. Bancroft's Essay on Yellow Fever, and a paper by Dr. Chisholm, Edin. Med. and Surg. Journal, vol. vi. p. 389. These writers have only demonstrated, however, that the effluvia from *dead* animal matter in a state of putrefaction, offensive and noisome as it may be to the senses, is incapable of generating contagious or epidemic fever. The morbid and even natural effluvia of the living body, when allowed to accumulate by want of cleanliness and air, are unquestionably common sources of fever, and contribute mainly to its propagation, as has been intimated in the preceding note.

people than in London, as in Dublin, Cork, and some of the populous towns of the sister kingdom, contagious fever is generally prevalent, and, in seasons of distress, rages to an extent unknown in this metropolis. For here, in times of plenty, the subsistence of the poor is more effectually provided for; and the city remains for years remarkably exempt from fever. The last epidemic which occurred in London, followed a scarcity of two successive years (1799 and 1800): and it was during the prevalence of this fever that the necessity for establishing a House of Recovery became manifest; and an institution of that kind was opened in the month of February of the year 1802. The records of this Institution (the sole medical superintendence of which has been committed to me for fourteen years past) will afford a tolerably accurate view of the state of the metropolis since its establishment, inasmuch as it has been freely open at all times for the reception of poor persons attacked with fever; and has been in constant communication with the officers of the several parishes.

It will be seen, by an inspection of the fol-

lowing table of the annual number of patients admitted into the House of Recovery, that the epidemic did not entirely subside till the third year after it was opened; but that since that period the metropolis has been remarkably free from contagious fever. In one year, 1809, it will be observed that only 29 patients were received: and I can state, that for several years the house frequently remained empty for three or four weeks together. During this period too, being also connected with the Public Dispensary, I had an opportunity of observing the entire freedom from fever enjoyed by the inhabitants of the numerous crowded courts and alleys within the extensive district comprehended in our visits from that charity.

Patients admitted into the House of Recovery.

1802	164	1810	52
1803	176	1811	43
1804	80	1812	61
1805	66	1813	85
1806	93	1814	59
1807	63	1815	80
1808	69	1816	118
1809	29	1817	760

These annual numbers do not comprise the year from January to December inclusive; but the twelve months intervening between the General Meetings held on the last Friday in April; whence the number for 1816 is increased by including the commencement of the epidemic of 1817; and that for 1817 by the addition of four months of the present year.

Whether the epidemic of 1817 has been really much more extensive than the former, I am unable to determine. I am disposed to think that it has: but the smaller numbers admitted in the former period may possibly be accounted for by the less general notoriety of the young establishment, as well as by its smaller size; although I am not aware that it was ever under the necessity of refusing admission to any applicants. It contained however but sixteen beds; whereas the present hospital is capable of accommodating nearly seventy patients; and during the months of September and October last was generally full. It might have been expected, indeed, that the present epidemic would exceed the last in the extent of its course, since it occurred at a period of unparalleled distress among

the labouring poor; when the loss of employment, occasioned by the termination of the war and the general suspension of the manufactories, concurred with the failing harvest of 1816 to increase the difficulties of procuring subsistence.

As epidemic fever is unquestionably generated in the first instance by defective nutriment; so we cannot doubt that it continues to originate in many successive individuals, during the existence of its cause, independently of any communication with each other. It happens indeed constantly, that persons are seized with the fever in insulated situations, or where no probability of communication with the diseased exists: and two or three members of a family are occasionally seen to fall sick on the same day; as if some common cause had influenced all. Nor is it unlikely that they should even be affected in succession under such circumstances, without deriving any infection from each other. For it seems probable, that the influence of deficient nutriment on the body is rather a predisposing than an exciting cause of fever, producing that condition of the system, which

is liable to be thrown into fever, by the slightest disturbing cause; as by anxiety, fatigue, exposure to cold, acts of intemperance, &c. Nevertheless, the actual commencement of the fever in persons so predisposed, will be accelerated or postponed by the accidental escape from, or exposure to, the exciting causes. We cannot therefore doubt that a great number of the cases of fever which occur during an epidemic season, are entirely independent of contagion in their origin. And there are not wanting advocates for the opinion, that epidemics are propagated exclusively in this manner *.

* At a time when many benevolent persons assembled in this metropolis, under the auspices of its chief magistrate, for the purpose of aiding the Fever Institution, to stem the progress of the existing epidemic, a most extraordinary appeal was made to them with great industry, and at a considerable expense, by Dr. Maclean, who, with all the zeal, and, I must add, the extravagance of an enthusiast, attempted to convince them, First, "that contagion, far from being ever the cause of epidemic diseases, is perhaps the only agent in nature, capable of acting upon the living body, which cannot possibly concur, either to aggravate, or to produce them." And next, "that the erroneous doctrine that epidemic diseases are capable of being propagated by contagion, was unknown to the ancient physicians; and did not even enter into the popular

The evidence however of the existence of infection about the persons, bedding, and clothing of those who are affected with common fever, appears to me incontrovertible. Even those who deny the production of a specific contagious matter, as in the case of small-pox, measles, and scarlet fever, nevertheless admit that the morbid exhalations and secretions, accumulating about the persons and coverings

superstitions of any nation, previous to the middle of the sixteenth century." Nay more, that "it was first invented, and propagated for a political purpose, by pope Paul III. in the years 1546 &c." And these truths, we are told, are the result of "his researches"!

With respect to the first position, as it is entirely unsupported by historical evidence, and is probably credited by no other individual save Dr. Maclean, I conceive it altogether unnecessary to attempt any refutation of such an opinion. But I must acknowledge my surprise, that any physician should advance assertions, as the result of his learned researches, which a schoolboy might refute. I shall content myself with noticing the following passages, in proof of the existence of the notion of contagion both among the poets and the historians of ancient Rome. Livy, in more places than one, speaks distinctly of contagion; he even states a particular epidemic to have been local in its origin, but to have become *contagious* afterwards. "Et primo temporis ac loci vitio, et ægri erant, et moriebantur: postea *curatio ipsa et contactus ægrorum* vulgabat morbos!" cap. xxvi. The same historian, describing a pestilence early in the fourth century, U. C., says, "vulgatique *con-*

of the sick, constitute a medium of infection capable of generating fever. The advocates for both these doctrines, therefore, agree in admitting that this infectious product of fever, accumulated and concentrated in the uncleanly and unaired habitations of the poor, where it chiefly originates, becomes a great and formidable agent in spreading the epidemic malady, far beyond the limits to which the predisposing cause would carry it. Numberless cases could be quoted from the journals of the House of Recovery in illustration of the progress of fever from individual to in-

tactu in homines morbi." lib. iv. cap. xxx. In an admirable description of a pestilence in the viith book of the Metamorphoses, Ovid expressly mentions contagion, by which the physicians and attendants suffered:

——— "obsuntque auctoribus artes:
Quo propior quisque est, servitque fideliùs ægro,
In partem leti citius venit."

The learned Dr. Mead, in his treatise on the Plague, has cited several passages from Thucydides, and Lucretius (who, in his picturesque description of the *Ignis sacer*, has nearly translated the account of the plague at Athens given by the former), and from Galen, proving the antiquity of the knowledge of contagion; and remarks that Aristotle has made it a problem, How the *Plague infects* those who approach to the sick. Against such evidence it is difficult to conceive how Dr. Maclean can persist in maintaining his erroneous position.

dividual by communication. I shall content myself with mentioning one family of ten persons, nine of whom were admitted in succession, after one had died; only five of these resided together, the others having caught it by visiting them. The majority of the patients admitted during the past year have consisted of men and their wives, or small families, or lodgers from different apartments of the same dwelling-house. The infectious character of the present epidemic appears to me, therefore, unquestionable.

How far the influence of particular seasons may contribute to accelerate or retard the progress of such an epidemic, is not very evident; and we are equally ignorant of the nature of that influence. At all times there appears to be a greater disposition to fever in London during the autumnal months, which diminishes with the approach of winter *. The

* Dr. Willan has observed the same fact. He states in his Report for September 1796: "In September, also, fevers usually appear, which, from their commencement, exhibit symptoms of malignancy, &c.—The disease is extended by infection during the months of October and November; but its progress is generally stopped by the frosts of December." (See Reports on the Diseases of London, p. 43.)

present epidemic, if we may deduce such an inference from the demands upon the House of Recovery, was most particularly prevalent from the beginning of August to the middle of November*. Whether the extreme mildness of the winter may have been conducive to the continuance of the disease, it would be difficult to determine; but it has happened generally during the partial occurrence of fever in former years, that few patients have claimed admission in the months of January and February. It has been supposed that the cold months were more likely to occasion the propagation of fever, by inducing the subjects of it to shut themselves up for the purpose of excluding the cold: but they are at all times unused to the wholesome practice of ventilation, even when their habitations will admit of it; and the fact appears to militate against that opinion.

In the autumn of 1816, before the influence of the scanty harvest could be felt, there was rather more than the usual number of appli-

* The monthly admissions were in June 28, July 22, August 67, September 81, October 109, November 92, December 68.

cants for admission into the House of Recovery. In September and October, a fever manifestly contagious appeared in the courts about Saffron Hill, and among some young people, employed at a silk manufactory in Spital Fields, but who resided with their families. As usual, this fever subsided on the approach of winter: for during the months of January and the early part of February (which however was remarkably mild) few patients were received. In March the fever re-appeared in the vicinity of Essex Street, Whitechapel, where the silk-manufacturers resided; as well as near Saffron Hill, Old Street, and Clerkenwell; and in the following month in the parish of Shadwell, in the over-crowded workhouse of which it spread rapidly, upwards of 30 patients having been sent from thence in the course of six weeks. Other poor-houses, especially those of Whitechapel, St. Luke, St. Sepulchre, and St. George Southwark, became much infested with fever in the course of the summer and autumn. It was no matter of surprise, indeed, that these abodes of poverty should become the seats of contagious fever under the concurrent circum-

stances of dearth and deficient employment, which threw into their wards crowds of half-starved beings, many of them deriving their sole claim to relief from having slept in the streets of the parish, and who were already seized with fever. Paupers, labouring under fever, were also constantly transferred to the workhouses from their deserted habitations; so that the disease could not fail to spread in these houses, which were already so crowded that some of the patients complained that they had lain six in a bed, or even on the floor. Under these accumulated distresses, the asylum offered by the House of Recovery has been of infinite value, and has afforded the only practicable means of diminishing the mischief, and arresting the progress of such a calamity.

The fever, however, has not been confined to these resorts of paupers: it showed itself during the autumnal months in the private habitations of the poor in almost all the close and crowded districts in the eastern and north-eastern parts of the town, and in the Borough. It was most prevalent in the alleys about Essex Street in Whitechapel, near Golden Lane, Old Street, and in the many filthy courts about

Cow Cross, Chick Lane, and Saffron Hill, in the vicinity of Smithfield; and prevailed extensively in the districts near Kent Street, in the parishes of St. George and St. Saviour, in Southwark. But it was seen occasionally in various other parts of the town; in the courts of Shoe Lane, Holborn, Clare Market, the Strand; at Somers Town, and last in St. Giles's. It is rather singular that this district, proverbially the receptacle of beggary, should have remained nearly free from the epidemic till the month of November; since which period it has been the source of the most numerous supply of patients to the House of Recovery, at a time when the fever appears to be abating in the eastern districts*. The filthy streets lying between Dyot Street and the extremity of Oxford Street, including the former, have been the principal seats of the disease in that parish.

The preceding statement is the result of my

* This was written in the month of January, before the processes of purification employed by the Fever Institution had arrested the progress of the contagion in that district; which, as I have observed below, these measures effectually accomplished in the course of that month.

own observation, as physician to the House of Recovery; and will probably be deemed sufficient evidence of the existence of an epidemic fever in the metropolis. Nevertheless there are medical practitioners, who, doubtless, from having no connexion whatever with public institutions, and being limited in their personal experience to an exclusive attendance on families of some condition, have asserted that there has been no unusual prevalence of fever in the metropolis. It may therefore be proper to add, that other evidence can be adduced in proof of this fact. A circular letter was addressed by the medical committee of the Fever Institution to the physicians of all the hospitals and dispensaries in London, requesting information as to the proportion of fevers recently occurring in their respective establishments. In all the Hospitals except two, (from one of which no answer was received,) and in all the Dispensaries, except one at the west end of the town, a very great increase in the number of patients affected with fever was asserted to have occurred. This was the case even with respect to St. George's Hospital, situated at Hyde Park Corner, and the Mid-

dlesex Hospital on the north of Oxford Street. In Guy's Hospital the number of fevers admitted during six weeks, in September and October 1817, exceeded the number admitted during the same period in 1816, in the proportion of 15 to 1, as was ascertained by Dr. Marcet. The existence of an epidemic fever, therefore, is unquestionable *.

* Since this was written, the epidemic has become sufficiently notorious to claim parliamentary investigation, with a view to give public aid to the beneficial exertions of the Fever Institution in checking its progress; and most ample evidence has been brought before the Committee of the House of Commons of the existence and extent of the calamity, as may be seen by reference to the Report of that Committee recently printed by order of the House.

SECTION II.

DENOMINATION OF THE FEVER.

All the attention which I have been able to give during fourteen years, to the passing phænomena of fever, and more especially the observations which I have made while several hundred cases have been presented to my view within the compass of a few months, have tended more and more to impress me with the conviction of the identity of that disease under all its modifications. Its character, indeed, is greatly varied by the different circumstances in which it occurs; by the age, constitution, and previous health of the patient; by the intensity of the exciting causes; by the situation and season; and by early neglect or mismanagement: but it is not more varied than other febrile diseases, the smallpox, for instance, or scarlet fever, under similar circumstances; and examples of the most distinct modifications which it undergoes, are often observed in individuals of the same family. Thus, in the instance of a man and his wife,

who were brought to the House of Recovery together; the former was affected with the mildest symptoms of fever, which scarcely confined him to bed, and terminated in a speedy convalescence; while his wife was lying in a state of stupor, her skin covered with *petechiæ* and *vibices*; in a word, exhibiting the most formidable symptoms of the worst form of Typhus. Yet these extreme degrees of the disease manifestly originated from the same cause; and it would be equally unphilosophical to account them different kinds of fever, and give them distinct generic appellations, as in the case of the benign and confluent smallpox, which are generated in like manner from one contagion.

This doctrine, indeed, I heard strongly inculcated twenty years ago by the enlightened professor of physic in the university of Edinburgh; and it is maintained by our ablest contemporary writers on fever, especially by Dr. Armstrong, the author of one of the best treatises on Typhus that has ever appeared, and by those able physicians attached to the Houses of Recovery in the sister-kingdom, who have had the most ample opportunities

of investigating the nature of fever. The following passage from a work lately published, which is replete with original observation and sound pathological knowledge, expresses so strongly my own views of this subject that I shall transcribe it.

"Those who are most familiar with the aspect of fevers on a large scale, will be least disposed to subdivide them into *genera*. The resemblance, or rather the convergency of *Typhus mitior*, and *Synochus*, are at least as palpable as the same relations between *Typhus mitior* and *Typhus gravior*. Each of these species commences with some inflammatory diathesis or congestion; each may decline with stupor, subdelirium, and death; and the appearances on morbid dissection complete the analogy. They occur besides indiscriminately in the same family. Among six persons affected with fever in the same habitation, it is more than probable that a specimen of each form will be exhibited. Neither do the mildest nor the severest species propagate merely their own forms, but rather seem to generate each other promiscuously without any known rule. In truth, the commencement

and early stages of each have so many common features of resemblance, as often to elude the discrimination of very experienced observers: at a mature period indeed they are very discernible; yet under no circumstances have they appeared to me to lose their common generic character*."

The older writers, under the influence of system and hypothesis, greatly erred in the multiplication of the species and appellations of fever; and Dr. Cullen performed a material service to pathology, when he reduced the multitude of names to three genera, under which they were ranked as synonyms. But the propriety of the three genera which that able nosologist established, is very questionable. With respect to the first, *Synocha*, his distinguished successor in the professorial chair above alluded to, Dr. James Gregory, asserted, that during thirty years practice he had never seen a purely inflammatory fever unconnected with acute inflammation of some organ; and my own subsequent experience entirely coincides with that assertion. It can-

* See Dr. E. Percival's Medical Reports on the Epidemic Fevers of Dublin, p. 49.

not be doubted, as Dr. Gregory remarked, that the *Causus*, or ardent fever of the ancients, was the endemial bilious remittent of hotter climates, and that no continued fever of this country assumes that character. This genus, therefore, should be discarded, and in fact occupies no place in the treatises on fever which have lately appeared.

In constituting the genus Typhus, which it is evident from the long list of synonyms comprehends the principal varieties of continued fever, Dr. Cullen found, that his definition excluded some of the instances, in which the heat of the skin was augmented, and considerable vigour of pulse occurred, especially at the commencement: and he deemed it necessary to establish another genus, which he arbitrarily called Synochus. But he candidly questions the propriety of this classification, and acknowledges that there is no essential distinction, no line of separation to be drawn between the two; the Synochus being in fact Typhus, only somewhat more inflammatory in the beginning*. And he thus appears to have fallen

* The term Synochus has been used by Dr. Willan and some other writers, not in the sense employed by Dr.

into a dilemma, by an attempt to institute an artificial distinction which was inconsistent with the phænomena of the disease. It would have been more consonant with these phænomena, as well as with the principles of classification adopted by natural historians, to have made fever a genus, and marked its varieties; or rather, as Typhus has become the popular appellation of the fever of this country, to have extended the definition, so as to include, as Dr. Armstrong has done, the inflammatory as well as other varieties of the disease.

But even if we use the word *Typhus* in the acceptation of Dr. Cullen, upon whose authority it has been introduced, the character

Cullen, but rather in that used by Sauvages, to denote the more mild and inflammatory forms of fever, which usually occur in summer, and which are generally connected with biliary disturbance (see his Reports on the Diseases of London); and I have myself employed the term in the same way in some of my own Reports. But it is impossible to point out any essential distinction. Dr. Willan always remarked that it was succeeded by a fever of a lower type in the autumn; and I frequently observed that when it occurred in a close situation, or in a dirty and ill-fed family, even during the summer, it assumed that character. The term, therefore, should be considered as the expression of a variety, and not of a different species of fever.

of the prevalent fever appears to me to accord with it as accurately as in any other instance of his clear definitions *. On the most cursory view of the patients occupying the wards of the House of Recovery, two very remarkable characteristics of the disease impress themselves upon the attention; namely, the universal expression of debility, exhibited in the countenance and supine position of the patients, and the general absence of preternatural heat. On a closer inspection, the small, weak, and hurried, or irregular pulse, and the disturbance of the sensorial functions, still further develop the character of the disease. Though but few instances of considerable delirium or great confusion may present themselves; yet the dulness, deafness, depraved sensations, complaints of disturbance of mind, frightful dreams, and innumerable distressing feelings and noises in the head, manifest the morbid condition of the sensorium.

This appears to me to be an accurate pic-

* Dr. Cullen's definition of Typhus is: "Morbus contagiosus: calor parum auctus; pulsus parvus, debilis, plerumque frequens; urina parum mutata; sensorii functiones plurimum turbatæ; vires multum imminutæ."

ture of the disease, even in its milder forms, which are alone the objects of a difference of opinion in regard to the nomenclature; and I apprehend, it is a not less accurate exemplification of the character of Typhus; which therefore I deem to be the correct appellation of the fever now epidemic; and the common fever of this climate.

SECTION III.

CHARACTER AND VARIETIES OF THE FEVER.

The great variety of form, which fever constantly assumes in different individuals, and which has rendered its identity questionable, occasions considerable difficulty in classing its modifications or constituting distinct varieties, for practical purposes. The subdivision into Typhus *mitior* and *gravior*, as indicating only a difference in degree of violence, is not merely imperfect, but is an incorrect distinction, tending to mislead us in our practical views.

The two intelligent physicians, whom I have already quoted, Dr. Armstrong and Dr. Percival, appear to me to have advanced further towards the true classification of the varieties of fever, than any preceding writers on the subject; and their views of it seem calculated to bring us nearer to the true knowledge and successful treatment of fever, than the arrangements hitherto proposed.

These writers agree in distributing the varie-

ties of fever into two great subdivisions, *simple* Typhus, or the form of the disease in which no organ of the body is particularly deranged; and the *complicated*, or, as Dr. Armstrong calls it, the "*inflammatory* Typhus," in the course of which some one or more of the important organs become signally diseased, suffering from inflammation. But as, in the class of complicated or inflammatory Typhus, a great variety of disease will occur, not only in consequence of the various structure and functions of the organs which may be affected, of the age and strength and previous habits of the patient, but of the degree of inflammation and general excitement existing, Dr. Armstrong has subdivided the inflammatory Typhus into "acute" and "sub-acute," a distinction which appears to me on the whole founded upon a correct and judicious investigation of the phænomena of fever, and serving to explain, as well as leading to the means of remedying, some of the most unmanageable and, upon the old hypothesis, unintelligible conditions of fever.

There is a third subdivision of Typhus proposed by Dr. Armstrong, of a more hypothe-

tical character. This he calls "congestive Typhus;" of which nature he conceives those quickly fatal cases of fever to have been, which were accompanied with vibices, and other symptoms formerly considered as indications of putrescency. In these cases, he supposes that the first stage of oppression in which the venous system is loaded, is not overcome by a subsequent stage of excitement, and that death takes place from the congestion in the internal organs; the brain, liver, spleen, &c., being found gorged with black blood.

This appears to me, to be rather a hasty generalization, to which, indeed, that respectable author is perhaps too prone. The only two cases which I have seen approximating to this character, in which extensive vibices or ecchymoses appeared, seem, however, to sanction the notion, of a state of venous congestion, as their proximate cause, as I shall have occasion to state below. But in both these cases, it will be seen that this condition supervened, at that later period of the disease in which the more formidable symptoms of fever usually arise, and apparently during a stage of excitement.

In attempting to delineate the character of this epidemic, I shall follow the two leading subdivisions above mentioned; beginning with a description of the simple Typhus, and proceeding to the more complicated varieties connected with different degrees of acute and sub-acute inflammation.

1. *Simple Typhus.*

The mildest and most simple form of the fever, and that which does not strictly correspond with the character either of Typhus or Synochus, is that which occurs principally in children. Dr. Percival has noticed that variety under the appellation of *Febricula*. It commences with lassitude, shiverings, and headache, which are soon followed by heat and dryness of the skin, thirst, aching pains in the loins and limbs, and some oppression at the præcordia. Occasionally nausea and vomiting occur at the beginning; the appetite is lost; and the tongue is covered with a thin white mucus. Even when neglected, these symptoms frequently subside spontaneously after a week or ten days: they invariably did so, when brought early into the House

of Recovery, by the assistance of the cool atmosphere, and the treatment of that establishment. The skin is generally somewhat hotter than natural, and feels parched and tense under the hand: and the returning coolness and softness of the surface is one of the most prominent indications of convalescence; for the pulse, in these irritable subjects, will continue hurried, and the tongue rather white, after the general disturbance of the functions is removed. The headache and pain of the limbs are generally moderate, and there is seldom any tendency to delirium, except now and then a slight confusion in waking from sleep. The whole excitement subsides in a few days, and the convalescence is generally speedy; but if the patients remain at home, they are extremely liable to relapses, either from the renewed influence of contagion, or from the want of proper support.

A few of the adults admitted into the House of Recovery have been affected with this mild febricula, but it is almost exclusively observed in children, or persons under 17 years of age: and I have constantly had occasion to remark, that the parents and adult members of a family

were afflicted with the most formidable symptoms of Typhus, or even had died by its attack, while the younger branches had escaped with the more gentle visitation; thus affording the most demonstrative proof of the identity of the disease under its opposite characters.

It was principally in this modification of simple Typhus, and in these young subjects, that any material augmentation of the cutaneous temperature was noticed. In general, however, the increase of heat was very moderate, and in only two or three cases during the summer was any intensity or pungency perceived. These constitute the only instances, in which, had they been seen sufficiently early to expect a sudden termination of the fever, the cold affusion appeared to be indicated: a circumstance which seems to demonstrate a remarkable difference in the character of the present epidemic, compared with the fevers treated by Dr. Currie.

I have not recently attempted to ascertain the temperature by means of the thermometer; but several years ago I employed it constantly in the House of Recovery, and then found that the heat of the body, examined under

the tongue or axilla, seldom exceeded the natural temperature more than one or two degrees; and when the most burning sensation was impressed on the hand, I never saw the thermometer in those situations indicate more than 104° of Fahrenheit's scale. Dr. Currie observes that he had scarcely ever seen the thermometer rise higher than 105°, either in the paroxysm of an intermittent, or in continued fever*. Some writers, however, as he remarks, have mentioned a state of febrile heat 4° or even 5° higher: and my friend Dr. Yelloly lately informed me, that he had been induced, on account of the burning sensation produced by touching the skin of a patient affected by this epidemic in the London Hospital, to apply the thermometer, when it rose under the tongue to 107°. On the whole, however, in a very large majority of the cases which have been under my care, the heat, I am persuaded, has seldom exceeded 99° or 100°; nor has the subsidence of the heat, even to the natural standard, been generally followed by a proportionate relief

* See his Reports on the Effects of Water in Fever, &c., vol. i. p. 178.

of the pains and other febrile symptoms, unless the skin at the same time became soft and moist.

A considerable number of the adult patients were affected, especially during the summer, with the simple form of Typhus: but it did not in them exhibit the very mild symptoms of the febricula just described. Although the heat of the skin was less remarkable, the general disturbance of the functions was greater, the pains more acute, and the whole course of the disease considerably longer. It varied, however, materially in different individuals, both in its mode of attack and its subsequent progress. In a few cases the disease came on gradually, the patient feeling himself feeble and inactive, with a weariness upon slight exertion, loss of appetite, and depression of spirits, and a frequent sense of creeping and chilliness especially down the back; yet continuing to go about his business for a few days, before any urgent febrile symptoms appeared. In most cases, however, the attack has been marked by a more immediate depression of strength, with chilliness often

amounting to shivering, a sense of load and oppression about the præcordia, and total loss of appetite. These symptoms have been speedily followed, or actually accompanied, by headache, most commonly referred to the forehead, or occiput, and by severe aching pains in the loins and limbs, especially in the larger joints, which were much aggravated by every attempt to move. The skin now became hot and dry, without any disposition to perspiration; the pulse rising in frequency, commonly to 100 or 110, but varying from 86 or 90 beats to 130 in the minute. The tongue, in many cases, was covered with a moderately thick gray fur, rather clammy; in others it became extremely dry and parched, or glazed, and sometimes slightly tumid, but with very little appearance of fur, and of a dusky red, or yellowish hue, and sometimes brown. The thirst was generally considerable, and much complaint was made of the constant bad taste in the mouth, and the parched and heated condition of the fauces. The nights were generally passed without sleep, or with some of those disturbed and dreaming slum-

bers, in which the activity of the imagination so nearly equals the waking reverie, and there is so little actual repose, or feeling of refreshment on waking, that the individual is unconscious of having slept; but, in general, the patients were free from delirium, even during the night. The bowels have commonly been disposed to constipation in the beginning, but have generally continued free afterwards, with little more assistance than the common saline mixture afforded.

With these moderate symptoms the fever has usually proceeded, in nearly two thirds of the patients who have been under my observation, to the end of the second and third weeks; a few being convalescent on the 7th, 8th, or 9th days; more attaining that state about the 12th or 14th; and still more going on to the end of the third week, and some even into a fourth, before they could be pronounced free from febrile symptoms. After this, a week or more commonly elapsed before they regained sufficient strength to be dismissed from the hospital; so that the whole duration of the indisposition has in many cases

extended to the fifth, and sometimes to the sixth week *. It should be observed, however, in estimating the duration of this fever, that it may probably be protracted considerably by the omission of proper treatment in the commencement; as the poor patients receive little assistance during the first few days, and are seldom sent to the House of Recovery before the 6th day of the fever, most of them in the second week; and many so late as the 12th and 14th or 15th days from the commencement of their illness.

The symptoms continue, during the periods just mentioned, commonly with little variation, and subside gradually; though, in a few

* To give a more distinct view of the proportion of cases, which have extended to these different periods respectively, I may state, that of 100 cases, taken in succession from my journal, 37 were *convalescent* between the 7th and 14th days, 36 between the 14th and 21st, and 21 between the 21st and 30th: and that 41 were dismissed *cured* in the fourth week, i. e. between the 21st and 30th days; and 22 between the 30th and 40th; 5 even remaining beyond that period; and only 12 being discharged between the 14th and 20th, and 11 before the 14th day from the commencement of the fever; eight having died, 5 on the 20th day.

instances, the pains have been suddenly relieved after a spontaneous perspiration, or the use of a purgative. The headache has not appeared to be so distressing, at least it has not been so much the subject of complaint, as the pains of the limbs, and not in general of the same duration. It had sometimes entirely subsided in patients brought in after the 7th day, especially if they had been purged or bled, while the aching of the limbs remained severe. After the headache had ceased, or had been much alleviated, the head has still however been the seat of distressing sensations; such as loud and disturbing *tinnitus;* or *vertigo*, and a sense of weight or load, or of increased bulk, the head seeming "as large as two," in the language of the patient.

The pain in the limbs and back, but especially in the former, has been the most constant attendant upon this fever. It has always begun with the headache, or preceded it; has sometimes existed without it; and commonly continued after that had ceased. It has been the subject of the loudest complaints, and the occasion of much moaning.

It is variously described by different individuals; sometimes as an aching in all the bones; sometimes as a soreness of the flesh, as if the person had been beaten; is often said to be fixed in the joints, especially the large joints, as the knees and shoulders; and occasionally as a painful stiffness and immobility of the limbs. It is always said to be much increased by attempts to move, and, in a few cases, only felt when these attempts are made. The entire sleeplessness or imperfect slumber during this period is usually ascribed to the continuance of these pains; but it occurs equally when the pain is moderate and only felt on motion; and is probably the consequence of the disturbed state of the circulation in the sensorium. The depression of strength in the muscles is coeval with these pains, and usually ceases with them; so that the patient, who had previously felt himself scarcely able to turn in his bed, finding his recumbent position irksome, will get up, and move about, suffering that debility only which is left by want of rest and nourishment, and by the exhaustion of vital power consequent upon all exces-

sive action of the nervous and arterial system.

With respect to the different appearances exhibited by the tongue, which I have described, I have never been able to trace a decided connexion between them, and any particular condition of the *primæ viæ*. The same state of the tongue will be seen with diarrhœa, constipation, or perfect regularity of evacuation, with total *anorexia*, and a considerable relish for food. A dry tongue seldom becomes moist after the use of a purgative, and a moist tongue will sometimes become dry immediately after that operation. I have witnessed the most complete disrelish for food, continuing for a long time, with a moist clammy tongue; and in several cases of a fever, which, though uniformly mild in its symptoms, has spread through a whole family, and has been long and tedious, with great disposition to relapse during the convalescence, the tongue has constantly preserved this character. If any more frequent connexion is observable, it is perhaps that of the glazed and tumid yellowish brown tongue,

with diarrhœa. I have been disposed to infer, that some of the appearances of the tongue are more distinctly indicative of the state of the sensorial power; inasmuch as the fur has seldom, if I am correct, become rapidly brown or blackish, without some simultaneous indication of impaired power; languor, feebleness, failing pulse, confusion of thought, vertigo, tremor of the tongue, or subsultus, usually occurring. At all events, the converse of the proposition appears to be true; that these symptoms seldom come on in the common fever of this country, without the attendant change of the tongue, which puts on the dark dry coat, and is very liable to chap and become tender. But I have seen a few striking exceptions to this observation. The most important indications, however, afforded by the appearance of the tongue, are perhaps to be deduced from its *changes;* that is, from its tendency to return to the natural state, whatever the character, which it usually maintains throughout, may be. If the clammy tongue becomes cleaner, the parched one begins to lose its shining appearance, and to exhibit its papillæ

surrounded with moisture, or the crust of the coated one to soften and loosen, we may generally anticipate a favourable change in the other symptoms, if it have not at the same time occurred. Perhaps we may with equal confidence prognosticate favourably of the issue of a fever, in which the tongue retains much of its natural appearance in the midst of many untoward symptoms; a circumstance which not very unfrequently occurs. The same observation, I believe, is applicable to the pulse; and when both these favourable symptoms concur, that is, when the tongue is moister and cleaner, and the pulse less frequent and softer, than the severity of other symptoms would lead us to expect, we commonly see the patient recover, though the general indications of danger may be extrely emgreat.

The latter portion of these remarks, however, is principally applicable to the more complicated varieties of Typhus about to be described, as the dark brown hue seldom, and the thick-coated and chappy condition never, occurs in the simpler forms of the disease.

The only variations in the functions of the

alimentary canal, which I have observed in this ordinary form of the fever, have been in some a nausea and vomiting, excited especially on taking food or drink; and in others a disposition to diarrhœa, the bowels also being excited to immediate evacuation by the same cause, and particularly on swallowing warm liquids, as tea, or milk-porridge. These symptoms were generally moderate, and did not contribute to prolong the duration of the disease. There is a permanent and less manageable diarrhœa, which I shall have occasion to mention presently, which generally produces a protracted disease.

The vomiting and diarrhœa, indeed, although not unfrequent concomitants of the milder Typhus, were not usually among its early symptoms; they commonly occurred in the second week, or later; sometimes one or the other alone, but not unfrequently together. They appeared to be the consequence of an increased irritability of the alimentary canal, probably occasioned by the morbid condition of their secretions; as they were often, especially the vomiting, only excited by the in-

gesta, particularly when these were taken warm; and were easily controlled by absorbents. The tendency to diarrhœa appeared to be considerable, for it occurred in about one patient in eight; the sickness rather less frequently. From the 1st of March 1817 to February 28th 1818 inclusive, 678 patients were admitted into the House of Recovery, of whom 79 were affected with diarrhœa, and 51 with vomiting. In about one third of both these numbers, the two symptoms were combined. In a few cases the sickness was accompanied by pain, and even tenderness on pressure in the epigastrium, which occasionally occurred without any accompanying sickness. This, however, was not a frequent symptom; since it was only noticed in 25 cases.

Under all the modifications of fever, but more in this simple form, the skin remains dry, and free from any marked tendency to perspiration. In a large majority of the cases, it subsides without any distinct humidity of the skin: and a physician must be little acquainted either with the power of medicines

or the phænomena of fever, who expects to command the secretions of the cutaneous vessels in this disease by drugs, or to shorten its course by an artificial diaphoresis. A spontaneous perspiration, however, not unfrequently occurs, and, in a few instances, affords perhaps the only example of a marked natural crisis that is ever witnessed at present. In 75 cases (of the 678 above mentioned) a free spontaneous perspiration took place, generally in the night; and in 19 of these it appeared to be completely *critical*, all the symptoms immediately giving way, and a speedy convalescence ensuing. In 27, the perspiration was accompanied by a marked and essential improvement in the symptoms, but did not at once terminate the fever: and in the remaining 29 cases, no relief whatever followed the occurrence of perspiration.

Deafness was not an unfrequent concomitant of fever under all its forms: it occurred in 65 cases. It is generally, and I believe correctly, deemed a favourable symptom. I do not recollect to have observed it in more than two patients, in whom the dis-

ease terminated fatally. It generally came on when the fever was at its height, or was beginning to decline; and, though sometimes very considerable, was usually of short duration, leaving the patient entirely before he was able to quit his bed, and never continuing after the convalescence was complete.

The fever, under its milder modifications above described, whether affecting the young or the adult, is by no means dangerous, and usually terminates in a complete restoration of the health and strength. Even in its simple form, however, when it attacks persons advanced in years, or those past the meridian of life, who have been greatly debilitated by hard fare, watching, fatigue, or long habits of intemperance, it is sometimes speedily fatal, in consequence of the sudden sinking of the vital powers, which are soon exhausted in such enfeebled subjects, by the continuance even of moderate febrile action. Several worn-out paupers, sent from the work-houses, at the age of 60, or even 70 and upwards, were carried off in this manner. All the symptoms were moderate, and the functions of the sensorium clear and undisturbed, except that, in three

or four cases, a slight confusion or drowsiness was observed. The pulse, though feeble, was seldom very frequent, and often did not exceed 90. Sometimes so early as the 5th or 6th day, but occasionally not till the 12th or 14th or even later, a great and sudden depression of the vital powers ensued; the strength rapidly sunk; the pulse became feeble, or almost imperceptible; the skin cold and clammy; and the countenance extremely depressed; and the evacuations were passed involuntarily. In this state of sudden collapse, the patient has generally sunk in the course of two or three days, sometimes in the space of twenty-four hours from its commencement.—But the fatal termination was in a few instances prevented by an active supply of stimulants.

2. *The more severe and complicated Typhus.*

With the mild and moderate symptoms above detailed, nearly two thirds of the cases of fever, as I have already stated, which have recently occurred under my observation, have proceeded safely to convalescence; some at the

end of the second week, but most in the third and fourth weeks, recovery having been retarded in a considerable number by relapses. The tendency to relapse, indeed, appears to have been remarkably great; for it occurred in no less than 54 instances, out of the 678, or nearly in every twelfth patient. In many of the cases, the prior attack had happened previous to the admission of the patient; but it was not an unfrequent occurrence among the patients already in the House. In the latter case, it was commonly the obvious result of incautious exposure to the air, or the premature use of animal food: in the former, it was probably to be imputed rather to the want of nourishment and other comforts during the debility of convalescence. It may be added, that it was principally after the simple and milder varieties of the fever that relapses occurred, and that they were generally not more severe than the previous fever, but occasionally proved fatal.

In favourable circumstances, fever, in the simple form above described, terminates with considerable certainty in health, without any

very active assistance from medicine. It is under its more severe and complicated forms, that the danger principally, and the mortality almost exclusively, occurs. These are the cases, indeed, in which the interference of our art is most important and most availing; and upon the right or wrong direction, the early or tardy application of it, the issue will often materially depend. It is more than probable, however, that the severity of many of these cases is the result of neglect or mismanagement, especially in bad situations, where the attack may have been originally mild.

The character most frequently exhibited by the fever, under its more violent forms, which I am about to describe, approximates very closely to that of the "slow nervous fever" so accurately depicted by Dr. Huxham; a fever which manifestly differs from the "putrid pestilential fever," described by the same able author, only in the less violence of its symptoms, and its more protracted course.

The greater severity of this form of the fever was not manifest from its early symptoms. During the first week, and often till the

8th, 9th, or 10th day, or even later, it exhibited the ordinary appearances of the more simple fever above described. There was no greater disturbance of the functions of the sensorium; nor any more sudden or considerable depression of strength: the pains in the head and limbs were not more severe, nor the pulse more frequent, nor different in force; and the tongue exhibited only the usual mucous fur of the first stage of fever of almost every description. But on one of the days just mentioned, or occasionally as late as the 12th, where the patient had been previously neglected, a considerable increase of languor and debility was felt and complained of, and was very obvious to the attendants. The voice became more feeble, and the speech slower, the tongue dry, with a brown streak in its centre; and the pulse smaller and more compressible (but quicker and with a slight sharpness in its beat); the eyes dull, and the countenance heavy, and the patient sunk more decidedly into the supine position. This change was speedily followed, or actually accompanied, by more manifest disturbance of the sensorium, and of the functions dependent

upon it. The first sign of this disturbance was a confusion or wandering of the mind, especially in waking from slumber: this at length increased, so as to continue through the night, or even during the day. In many cases, this intellectual disturbance was an approximation to stupor, rather than to active delirium; a dullness or inaptitude to receive external impressions: the patient was slow in comprehending the questions put to him, as well as in replying to them; would give an incorrect answer, or half an answer, and then appear to be lost; or mutter a few unintelligible words. In some cases it amounted to actual aberration, or incoherence of ideas; the patient either misapprehending, or being altogether insensible to, questions; and muttering constantly, even when not addressed.

With this state of confusion and slighter stupor, there was often a considerable degree of drowsiness, particularly in the daytime; sometimes a great disposition to moaning; though the patient was commonly unable to refer to the particular seat or cause of complaint. The skin continued parched, but not hot; and the tongue brown in the middle, and dry

along the edges; one cheek occasionally exhibiting a circumscribed flush; and the pulse beating about 120 times in the minute, generally small and easily compressed, but with a sensible smartness or slight jerk in its stroke.

In this state patients remained two or three weeks, where active remedies had not been resorted to, without any material increase of the symptoms, and have been slowly and with difficulty restored where proper measures were adopted, or sunk from mere exhaustion of the vital powers, without any supervention of more severe or malignant symptoms, without subsultus or stupor.

In a few cases, however, the change which occurred about the 9th or 10th day was followed by a more formidable train of symptoms. The delirious rambling became much more violent, the patient incessantly talking loudly, singing, roaring, and making various noises, night and day, but more especially during the night. This more noisy delirium, as well as that accompanied by continued muttering, was usually attended with great watchfulness. In this case also there was generally a great restlessness, and disposition to

pick or pull about the bed-clothes, and, where the strength permitted, to get out of bed. There was commonly also a slight degree of *subsultus* of the muscles; and the tongue, when protruded, trembled. It was not easy, however, in these severe cases, to push the point of the tongue beyond the teeth; for these, as well as the lips, were often glued over with a black tenacious mucus, with which also the mouth and fauces seemed to be lined; and which apparently extended to the larynx, occasioning a short husky cough, and rendering the voice also husky; so that the patient often spoke in a sort of hoarse whisper. The tongue was likewise generally much coated, in this state of the fever, with a thick, hard, brown fur, which became fissured or chappy, and tender. The soreness of the whole mouth was, indeed, much complained of under these circumstances.

The functions of the bowels, even in this state of depression and disturbance of the sensorial power, were not unfrequently performed with tolerable regularity, either unaided, or with the occasional administration of a laxative medicine: but in some cases,

a very troublesome diarrhœa came on, which contributed to exhaust the patient, and to prolong the duration of the fever. Occasionally this diarrhœa occurred among the earliest symptoms of the fever, but commonly later, and even in cases where the bowels had been previously kept free. Great debility usually accompanied it; the pulse continued frequent, from 120 to 130; the mouth and fauces were much parched; the tongue generally tender and glazed, with a yellowish brown hue, rather tumid, and disposed to chap, and tremulous when shown. The evacuations were very thin and watery, generally of a light colour, of a faint offensive odour, and occasionnally griping; but no tenesmus accompanied their discharge.

The appearance of *petechiæ*, which has been at all times a rare occurrence in the fevers treated in the House of Recovery, has been seldom noticed in this epidemic; only nine cases out of 678 having exhibited that efflorescence. The circumstance which give rise to this appearance are not obvious; but they have not seemed to me to indicate any particular severity or danger. Only one of

the patients, on whose skin they appeared, died. In two of these cases, which afforded the only examples of extensive ecchymoses or vibices, which I have seen, the character of the fever was very distinct from that just described. There was no rapidity of pulse; no active chattering or muttering delirium; no tremor or subsultus of the limbs; no black coated mouth, and no picking of the bedclothes. In one of these patients, the vibices appeared, on the 12th day, on all the prominent parts, the shoulders, knees, &c. The other was brought in in a state of stupor, already spotted with them in the same parts. This appearance was preceded and accompanied by great languor, with much loud moaning, and frequent cries of distress; the skin was rather cold; and the pulse extremely languid, but not exceeding 100 or 110; the tongue covered with a clammy mucus; the patients lying supine, in a state of torpor and stupor, appearing like obstinacy, as they would answer questions when shaken, and grumbled on being so roused to reply; their limbs lay chill and helpless, in a state very opposite to the starting and picking condition above described.

These two patients, under the treatment hereafter to be mentioned, soon regained a state of convalescence; but this was greatly prolonged and retarded, by the sloughing ulcerations which took place in the seats of all the ecchymoses; and in one of these, by successive suppurations in the mammæ and muscles of the arm.

This is the variety of fever, which Dr. Armstrong has, upon hypothetic grounds, denominated "congestive Typhus;" and I am much disposed to believe that these symptoms are justly referable to a state of venous congestion, with feeble or oppressed action of the heart and arteries; as the condition of the tongue and fauces especially, and the oppressed and stupid, but clear and impressible state of the intellect, are essentially different from the parched mouth, confusion, and active delirium, so indicative of excitement. But since these symptoms, as well as those more ordinary modifications of fever just described, may come on so late as the 12th day, and have therefore necessarily been preceded by the usual series of febrile actions, we cannnot, I ap-

prehend, with the intelligent writer now mentioned, consider this condition as a prolongation of the first or cold stage of fever, of oppression or congestion, as he calls it, which has not been overcome by a subsequent stage of excitement; and it is still less like the stage of collapse, which suddenly occurs in old and debilitated persons, already noticed, either in its character, or in the means which it demands for its relief. Perhaps it can only be considered as one of the various irregularities or disturbances in the balance of the circulation, which constantly occur in the progress of febrile excitement: but it is more easy to mark these, and more important to ascertain the appropriate modifications of treatment which they require, than to explain them upon any satisfactory principle.

The irregularities in the balance of the circulation, to which I have just alluded (a term which I wish to be understood as a mere expression of the fact), which occur in many cases during the progress of fever, contribute materially to modify its forms, as well as the treatment to be adopted for its cure. At va-

rious periods of the disease, sometimes on the 2nd or 3d day, more frequently in the 2nd week, or still later towards the close of the fever, some of the important organs of the body become more particularly disturbed in their functions, manifesting signs of a greater determination of blood, or of a certain degree of inflammatory action. The brain and the organs of respiration appear to be most liable to this partial injury; but not unfrequently the intestinal canal, the liver, the peritonæum, the tonsils, the trachea, and even the bladder, suffer in a similar manner.

It remains for me to notice the influence which these local affections have had upon the character of the present epidemic.

In all the instances of the more severe forms of the fever above described, in which considerable confusion and delirium occurred, the brain must undoubtedly be considered as the seat at least of much overaction and overdistention, if not of some degree of inflammation. Dr. Armstrong denominates this condition, and probably correctly, a sub-acute inflammation. The decided relief, indeed, afforded by antiphlogistic remedies, if applied suffi-

ciently early, leaves little room for question upon this point. In a few cases, however, which occurred in the House of Recovery, unequivocal symptoms of acute inflammatory action in the brain appeared; the fever manifestly assumed a phrenitic form, a character which it maintained throughout its shorter course, whatever the early management might have been, so on terminating fatally, or in convalescence, and never degenerating into the "slow nervous fever" above described. The violent symptoms set in much earlier, even the delirium commencing so early as the 4th or 5th day. The pain of the head was more acute, and accompanied by intolerance of light, and a staring appearance of the eye. The delirium was more active, inciting the patient to perpetual movements, so that it was extremely difficult to confine him to his bed, which could only be effected in some cases by a strait waistcoat, especially as the muscular strength was often very considerable during this excitement. One man, in this state of delirium, taking advantage of the momentary absence of the nurse, sprung from his bed, and climbing over the sash of a win-

dow, which he opened from the top by the rope, scrambled to the outside, though it was more than five feet above his bed. The pulse was generally frequent, from 120 to 130, and rather sharp; the tongue sometimes only white and clammy, but sometimes clean and parched; and the skin usually hot and dry.

When this form of the disease was not checked in time, the violent delirium and active restlessness subsided into muttering and moaning, with occasional cries or screams of distress, or into a mere rolling of the head, and constant jactitation of the limbs, until the patient sunk, and the powers of life were exhausted. It appears to me, indeed, that few symptoms are less fallacious as indications of internal disease, than this active and restless jactitation of the limbs, especially when accompanied by rolling of the head, for it is never observed but under the existence of some acute cerebral irritation.

This variety of the disease occurred in a few young and stout subjects. In proportion to its acuteness, it appeared to be more under the influence of remedies; for all the patients

who were seen soon after the commencement of the symptoms, recovered; the whole train speedily subsiding, and the strength and other functions soon regaining their healthy state. The popular appellation of "brain fever" is sufficiently applicable to this form of the disease; which is, I apprehend, more common among persons better fed and lodged than the pauper patients of a public hospital. I am persuaded at least, that a considerable and early determination to the head has taken place in a larger proportion of cases of fever, affecting persons of better condition, than in those observed in the practice of hospitals and dispensaries. I have seen delirium under the former circumstances, so early as the second day.

The organs of respiration have been the seat of an inflammatory affection, more or less severe, in a considerable number of cases, during the present epidemic, and especially during the winter months; for no less than 144 instances of pectoral disorder occurred in the 678 patients of the year: several of these were slight catarrhal coughs, which were chiefly complained of as interrupting

sleep, and even unaccompanied by pain or dyspnœa. Many of them, however, were more severe, and attended by pains in the side or under the sternum ; and several had the character of pleuritic stitches, with short continued cough and greatly impeded respiration. These symptoms occurred in combination with every variety of the fever, though most frequently in conjunction with the simpler forms of it, but were sometimes very troublesome and severe, where the tongue was black, and delirium, subsultus, &c. were also present. But these inflammatory affections of the respiratory organs, especially when united with such severe symptoms, were most unmanageable, and even fatal, when the trachea and larynx became their seat. One case, in which all the symptoms of that formidable malady cynanche laryngea were combined with tremors, a coated black tongue, and extreme languor, proved rapidly fatal. In four other cases, a considerable affection of the membrane lining the trachea was manifest, in conjunction with severe typhoid symptoms. In two of the most violent, indeed, the loud crow of genuine croup was heard at each paroxysm

of the harassing cough. One of these also proved fatal; and the other patient had a slow recovery, very gradually regaining his strength and the natural tone of his voice. All these occurred in the months of December and January. But many of the catarrhal, and several of the more acute pneumonic affections accompanied the fevers of the summer and autumn. It is not impossible, however, that a few of the catarrhs, especially those which supervened towards the close of the simple fevers, might have been the result of the very airy condition in which the wards were necessarily kept for the purposes of ventilation, as this House affords no accommodation for convalescents. Many of those affections, however, came on in the middle or early stages of the fever, or actually existed previous to the admission of the patient.

The tonsils and parotid glands also not unfrequently became the seats of severe inflammation, especially in the latter stages of the fever. Fourteen instances of this combination occurred, in two or three of which the parotid glands, especially, became prodigiously swollen, so as to render both deglutition and

respiration difficult, and in one case appeared to occasion death by suffocation.

Numerous as the instances of vomiting and diarrhœa were, they were seldom accompanied by any indications of the presence of an inflammatory condition: in 25 cases only was any soreness, or tenderness on pressure, in the epigastrium or hypochondria, complained of; and in but two or three a similar affection of the peritoneum. There were no indications of hepatic congestion in any of those cases, unless its existence could be inferred from the immediate relief (in fact the complete solution of the fever) which ensued in one case, upon a copious black evacuation of a bloody appearance from the bowels, the patient having previously lain several days in a state of great languor, with considerable confusion and nightly delirium, and a very dark coat on the tongue. On the following day he passed a healthy natural motion; his tongue became moist, the head clear, the sleep sound, and the strength much improved; and he experienced a rapid recovery.

Towards the close of the fever, that is in the second or third week, the tendency to

acute inflammatory action was most manifest. In some cases, indeed, it appeared to be unconquerable; recurring once or twice in the same organ, or seizing some other part when subdued in the seat which it had first occupied. Thus a recurrence of cough, with a stitch excited by inspiration, was not unfrequent; and such an affection of the chest sometimes ensued after a determination to the head had been removed—both requiring and yielding to evacuants and blistering. Three successive and violent attacks of local inflammation occurred in a girl of twelve years, who was brought to the House of Recovery in a state of insensibility, with a blister healed on the Nucha. Upon recovery from this state, the febrile symptoms suddenly recurred, the pulse rising again to 130, but without any affection of the sensorium; and she complained of acute pain in the abdomen, the surface of which was found to be exceedingly tender when pressed. By the application of leeches and a blister, this peritoneal inflammation was subdued, and she was once more approaching a state of convalescence, when a similar return of the febrile symptoms, accompanied by a short incessant

cough, with a severe pain in the side, much increased by the cough or inspiration, indicated a smart inflammatory affection of the lungs. This was successfully combated by the same means, and she was dismissed in good health. A similar example of repeated inflammatory attacks towards the close of the fever, was observed in a young man in whom the previous symptoms had not been severe. He was brought in on the 7th day of fever, complaining of much oppression at the præcordia, and headache, with a pulse at 60. The pulse sunk on the following day to 52 *, and continued at this rate nearly a week, when it rose to 76, 96, and 110, in three days successively, during which he complained of a trifling pain in his chest, which had come on chiefly in the night,

* I have been a little perplexed in determining the import of the indications to be derived either from the very slow or the irregular pulse, but have considered both as unfavourable. I observed the very slow pulse (in one case only 40) in three instances; in two of which it rapidly rose, being accompanied by local inflammation, and in the third, by a return of headache and a relapse having occurred in a state of apparent convalescence. Irregularity of the pulse was observed in 14 cases, the majority of which terminated ill,

and was not accompanied by cough before the third day, when the pain had become fixed and acute, and a severe stitch was felt on attempting to cough or inspire. This was relieved by one, and removed by a second blood-letting; the blood after the first venesection exhibiting a thick buff and a firm coagulum. In a few days he was found at the visit in extreme pain, which was fixed along the whole margin of the ribs, under which any pressure excited great agony, as well as the mere act of breathing; and he earnestly begged for relief before I left the hospital. This was effectually afforded by a dozen leeches applied along the margin of the chest: but three days afterwards he was again found to be suffering severely from a pain seated in the hypogastrium, apparently in the region of the bladder; and though some relief was again afforded by the application of leeches, he died before the following morning, probably exhausted by the severe and continued pain.

Besides this disposition to inflammation in the internal organs, which manifested itself towards the close of this fever, there was also in many cases a great tendency to several

other accessory affections of an inflammatory character, which contribute to aggravate the sufferings of the patient, to retard his recovery, or even to increase the fatality of the disease. The less important of these accessory disorders were rheumatic pains and swellings, chiefly affecting the feet, but sometimes the hands and shoulders, and which were attended with great soreness, preventing the patients from moving about. These affections occurred in six instances out of the number already specified; and in an equal number of cases, this last stage of the fever was prolonged and aggravated by the appearance of an erythema, in larger circumscribed patches, with a distinct margin, occupying the chest, or neck and shoulders, or hips. This continued several days; and during its appearance the patient remained restless, and the febrile symptoms were aggravated: in one instance a collection of pus formed on the hip, which ulcerated and produced a slough; and in another the patient died suddenly on the morning after its decline.

In five other instances large boils or small abscesses formed, three of them near the verge

of the anus, which healed soon after the matter was evacuated; but two on the extremities assumed the character of carbuncle.

The most formidable and fatal of these accessory diseases, however, which supervened in the later stages of the fever, was erysipelas, affecting the face and scalp. Three of the five cases of this disease which occurred within the year, terminated fatally; and in one of the two, a young woman, who recovered, a large collection of pus formed under the scalp, after the discharge of which she speedily regained her health.

In six or seven cases, deep and troublesome sloughing ulcers took place upon the sacrum or hips, and in the two patients in whom the ecchymoses appeared, they occurred on all the points of extravasation, which necessarily greatly retarded recovery. The former were of course the result of gangrene, produced by the pressure of these prominent parts during the long confinement of the patient to bed: they yielded pretty soon to careful management.

The period of convalescence commonly bore some proportion to the duration of the dis-

ease, being generally protracted after the more severe attacks, and short after the more simple and slight forms of it. The tongue usually remained white, and the pulse rather quick, for some days after the patients were able to move about; and while this continued, very slight errors in diet, exertion, or exposure to cold, were sufficient to produce relapse, which, as I have already stated, occurred in a considerable number of instances. In a few cases the convalescence was imperfect; a state of debility remained, which itself constituted predisposition to disease, and during which slight attacks of ordinary disorders might prove very injurious or fatal: in this way three patients died in the House a short time after the cessation of the fever; one, by the rapid increase of phthisical symptoms, which had existed previous to the attack of fever; another, in a state of marasmus with diarrhœa; and a third, (a deformed pauper, whose chest at all times impeded the function of respiration,) from a slight pulmonic inflammation, when he was upon the point of returning to the poor-house.

It will be manifest, I think, from the pre-

ceding sketches, that the fever which prevailed among the poorer inhabitants of this metropolis during the last eighteen months, is a specimen of that ordinary mild and moderate form of typhus, which has exclusively been observed by the practitioners of this country for the last thirty years. Essentially different as its character apparently is from the putrid pestilential fever of Sydenham and Huxham—a fever which no physician whose experience does not extend beyond the term just mentioned has ever encountered—yet, as it is still the result of the same circumstances, and still recurs with every return of public distress; so it is doubtless the same disease, stripped of its malignity by all those concurring changes in the arts of domestic life, and by those public provisions for promoting the general health, which are among the most important improvements of modern polity.

The mortality occasioned by the fevers of our own times is probably less in the ratio of their diminished severity. We have no accurate documents relative to the proportion of deaths to recovery in the cases of those putrid pestilential fevers alluded to. The bills

of mortality, however, exhibit such a large number of deaths by fever in former periods, as to leave no doubt of the comparatively moderate fatality of that disease at present.

The mortality in the House of Recovery during the first two years after its establishment in 1802, and before the epidemic succeeding the dearth of 1799 and 1800 had subsided, was in the following proportion: namely, in 1802,—of 164 patients admitted, 13 died; *i. e.* in the proportion of about 1 to 12½: and in 1803, there were 176 patients, and 17 deaths; which is nearly in the ratio of 1 to 10½. The mortality during the present epidemic has been rather less than the smallest of these proportions. For of the 678 patients admitted into the House of Recovery between the 1st of March 1817 and February 28th 1818, 50 died; or about 1 in 13½. This, I believe, is considerably below the ordinary scale of the mortality occasioned by fever, when it occurs in private habitations* or

* Some estimate of the mortality occasioned by epidemic fevers among the poor, even with access to the best medical assistance, may be found from the statement of Dr. Willan relative to the patients of the Public Dis-

in workhouses; but is probably nearly the average observed in our general hospitals of the metropolis*. It is less also than the mortality observed in the House of Recovery and Fever Hospital in Cork-street, Dublin, from the year 1804 to 1809 inclusive, according to the Reports published by the Committee of that institution: from which it appears, that the total number of patients admitted during that period was 4887, and the deaths 389, or in the proportion of about 1 in

pensary in the autumn of 1799. Of 22 persons mentioned in his Report, 10 died; that is, nearly one-half. See his Report, &c. p. 229.

* The Report of the Select Committee of the House of Commons, now printed, contains some evidence relative to the mortality of fever in several of the great hospitals; from which it appears, that a considerable variation in the number of deaths from that disease was observed in them also in different seasons—being least during the prevalence of the epidemic; and that the mortality has generally been considerably greater than in the House of Recovery. Thus, Dr. Marcet states, that from May 1816 to April 1817, (the year preceding this epidemic,) 50 patients in fever were admitted into Guy's Hospital, of whom 13 died, or about 1 in 4; whereas, from May 1817 to April 1818, 258 were admitted, and 16 died, or nearly 1 in 15; and therefore, that the average of the two years is a little more than 1 in 10. It was also stated in evidence by Dr. Yelloly, that

12½. But it appears from another document published by the physicians of that establishment, that in the last of these years the proportion of mortality was 1 in 11½. From some more recent statements, however, published in Ireland, a most extraordinary difference in the ratio of mortality appears to have taken place in some of the Fever Hospitals of that kingdom. The most remarkable instance of this is to be found in the Report of the Fever

during five years previous to this epidemic, viz. from 1812 to 1817, the average number of patients in fever admitted into the London Hospital annually, was 30; and the average number of deaths within the same period, about 1 in 5; but in the year 1817, 97 patients were admitted, of whom 13 died, or about 1 in 7½: and in the first three months of 1818 there were 35 admissions, and only 2 deaths, or 1 in 17½;—the whole average of mortality of 1817 and 1818 being about 1 in 9. In like manner the evidence of Dr. Tuthill, with respect to the Westminster Hospital, shows that the average mortality from fever in that hospital, for four years previous to this epidemic, was about 1 in 10; whereas in the present year, only 2 patients out of 38 have died, or 1 in 19. And that of Dr. Southey, in regard to the Middlesex Hospital, proves that the mortality has been less than usual during the present year, being 1 in 13 for the whole year, and 1 in 16 for the last six months; while the number of patients affected with fever within this period has been double the ordinary annual average.

Hospital of the city of Cork for the year 1817, with which I was favoured a short time ago from the able physician of that hospital, Dr. Barry. It is here stated, that the disease has terminated fatally in that hospital, on the average of the last fifteen years, in only 1 case in 30; and during the last year in 1 in 27. And even in some of the Dublin hospitals, according to Reports lately published by Dr. Percival, the mortality seems to have been nearly in the same ratio during the last three or four years, viz. the deaths not exceeding 1 in 23.

It would be difficult to account for this remarkable difference of mortality occasioned by fever in some of the hospitals of the sister-kingdom. It is in the highest degree improbable that such a difference can be in any material degree the result of a difference in the mode of treatment, as Dr. Barry candidly acknowledges. For, it is not easy to suppose that physicians of equal talents and attainments, educated at the same schools, and imbued with the same doctrines, and therefore entering upon their practical du-

ties with the same views, should very materially differ in the treatment which they pursue: and in fact no such difference can be traced in their writings. The fact may be explained, I think, partly upon the grounds which have been stated by the respectable physicians of the Dublin Fever Hospital, in their refutation of the statements published by Dr. Mills*; viz. by the notorious difference in the degree of fatality of fever in different seasons and under different circumstances. This variation was very considerable, not only at different periods of the year, but in several whole years, in the hospital just alluded to; and it has been equally remarkable in different years from the opening of the London House of Recovery to the present time, having fluctuated between the ratio of 1 in 12 to 1 in 6, till the year 1816, when it was 1 in 12½; and during the last year, taking the average from April to September inclusive, it was 1 in 15; from March 1st to the same day 1818, 1 in 13½; and from May 1st to May 1st 1818,

* See Edinburgh Medical and Surgical Journal, vol. x. p. 358.

again $12\frac{1}{2}$*. To ascribe such variations as these to any difference in the medical treatment, while directed by the same individuals, would be a palpable absurdity. They must depend upon some actual difference in the character of the fever itself in many of these instances, and also upon various changing circumstances with respect to the general condition and the age of the patients, and the period of the disease at which they have been admitted.

It cannot, indeed, for a moment be doubted, on perusing the Report of Dr. Barry, that the general character of the fever which he has had to treat, has been extremely mild. A similar impression is also left by the perusal of those

* A still greater variation in the mortality from fever in different years has occurred in the House of Recovery at Manchester, as appears from the statements laid before the Committee of the House of Commons by Dr. Holme and Dr. Roget: for it has fluctuated between the proportions of 1 in 20, and 1 in $5\frac{1}{4}$, according to the calculations of the latter. Thus in the year 1796 (the first year after the opening of the House) it was 1 in 9; in the following, 1 in 20; in the 3rd, 1 in 14; in the 4th, again, 1 in 9; in the 6th, 1 in 12; in the 8th (1803), 1 in $7\frac{1}{2}$; and in the following year, 1 in $5\frac{1}{4}$; and lately about 1 in 13: the whole average of 21 years being about 1 in 11; and the mortality the greatest when the number of admissions was the smallest.

of Dr. Percival. There is indeed one circumstance which, as Dr. Barry has admitted, will probably still more fully explain the difference: I mean the unusually large proportion of young persons who have been the subjects of the fever in the hospital of Cork. I have already stated, that children under 17 years of age were generally affected with the slightest symptoms of the fever, and very rarely perished by its attacks. It appears from the Cork Report, that more than one-third of the number of persons received into the Fever Hospital of that city were of this age; and the disease there was obviously still milder than in this country: for of 2707 patients, 955 were children; and of these only 6 died: whereas, of the 678 patients admitted into the London House of Recovery from March 1st, 1817, to the same day in 1818, only 145 were under 17 years of age, and of those 5 died: so that only about one-fifth of the patients were children; and the proportion of persons liable to be affected with the dangerous forms of the disease was in this case as 4 to 1; but in the Irish hospital, only as 2 to 1.

The extreme mildness of the fever, indeed,

in these young persons, is manifest from the statement of Dr. Barry, that "patients of this description required in general very little medicine, as a few instances only occurred where any untoward symptoms appeared." The same general character might be given of the disease in young persons in the London House of Recovery, as I have already stated; but a few of the children struggle through very severe symptoms; and the 5 above mentioned died under the following circumstances. One girl, aged 9, who had been ill a fortnight, died the day after admission in consequence of hæmorrhage from the gums, which had been oozing for some days. Another, aged 8, who had been ill three weeks, died suddenly soon after admission, while two leeches were bleeding. The third, aged 15, had been ill six weeks on admission. A fourth, also aged 15, and ill nine days before admission, died on the sudden decline of an erythema: and the fifth, aged 11, admitted also at the end of the third week, with much affection of the head, survived but five days.

On the other hand, the number of very aged persons was much increased in the London

House of Recovery by its connexion with the parish poor-houses, from which many worn-out paupers, at the age of 70 and upwards, were sent, in circumstances of decrepitude in which a common catarrh would have been sufficient to annihilate the feeble remains of life, and who sunk, as I have before observed, under the simplest attacks of the fever. Of 63 persons of the above number, (678,) whose age exceeded 50 years, 15 died, or nearly 1 in 4.

There is another circumstance, which most materially influences the ratio of mortality occasioned by fever, the consideration of which is absolutely indispensable in any attempt to attain accuracy in such an inquiry: I mean, the earliness or lateness of the period at which the disease is generally submitted to medical treatment. It is indisputable that, after the termination of the first week of fever, no means, which our art affords, are adequate to arrest its progress, or very materially to shorten its duration; and that after the 9th or 10th day our remedial powers become still more limited; so much actual organic lesion being generally already produced, especially in the delicate texture of the common sensorium, as to

baffle the best directed operation of physical agents. The success, therefore, of any particular mode of management in fever, as indicated by the comparative mortality resulting from that disease, can only be fairly estimated after the fullest consideration, not only of the comparative mildness or severity of the character of the malady, and of the predominant number of young or aged patients, but also of the number of those subjected to the treatment at a period anterior or subsequent to the occurrence of those morbid conditions just alluded to, in which the efficiency of medicalexpedients is extremely limited or altogether lost.

On this important point no direct evidence is to be obtained from the writings of the physicians already referred to. But from certain considerations I am induced to infer, that the Irish hospitals have recently had very considerably the advantage in this respect; and that they have, in fact, not only received a greater number of mild cases, but also a large majority of their patients at an earlier period of the disease.

To give some notion of the periods at which

medical treatment has been generally commenced during the present epidemic, in the London House of Recovery, I may state that of the 678 patients so often mentioned, only 124 were admitted before the 6th day of the fever, and most of those not till the 5th;—the remainder, 554, having been received subsequent to that period; and more than half of the latter, namely 324, on or considerably later than the 9th day. No less than 168 of these last, indeed, had been ill a fortnight and upwards, 62 of them from three to five weeks. In fact, I find that upon an average of the whole number of patients, the period of their illness previous to admission was 11 days; the average time of their residence in the hospital being about 15 days; that of the whole disease, from its commencement to their dismissal, being 26 days. In addition to this statement it may be observed, that of the 50 patients who died, 11 were brought in actually moribund, i. e. with symptoms of approaching dissolution, which continued to increase till death ensued. This deduction would reduce the actual mortality, as far as responsibility was incurred, to 39; and a further reduction to 36

ought to be made by the subtraction of 3 deaths, which occurred subsequently to the cessation of the fever, from accidental diseases, —phthisis, marasmus, and peripneumony,— which the fever might contribute to accelerate, but to which a previous strong tendency existed. This would bring the proportion to 1 in 19, which approximates to the higher ratio of the late Irish Reports; and the excess of which, I apprehend, is explicable upon the grounds just stated.

I have few observations to offer relative to the morbid appearances left by fever, as ascertained by dissection after death. Many circumstances have concurred to render such examinations inconvenient or impracticable during the prevalence of the present epidemic: so that only one investigation of that sort has been instituted, at the special request of a medical friend, in a well marked case of this disease, characterized by great prostration of strength, a black mouth, muttering, and subsultus. The only changes which were observed on inspecting the brain, were a slight effusion under the arachnoid membrane, and an apparent increase of the num-

ber of bleeding points, on making a transverse section of the cerebrum: no other appearance, different from those observed after death, in many cases where no contagious fever had occurred, could be detected, and all the other viscera exhibited a natural character. In the course of former years I have from time to time examined the state of the principal organs in persons who had died in the House of Recovery. In cases like the preceding, the appearances have always been nearly similar. There has generally been a more decided effusion between the external tunics of the brain; in one instance the serum amounting to about five ounces; and there has generally been some appearance of opacity, and also partial adhesions of the same membranes, and more appearance of turgescence in their vessels. The substance of the brain also exhibited the same appearance of many bleeding points, and occasionally appeared to be rather firmer than natural, in one case even forty hours after death, when the abdominal organs were far advanced in a state of putrefaction. In two cases, in which symptoms of pneumonic inflammation accompanied the fever, strong adhesions were found between the du-

plicatures of the pleura, and the substance of the lungs was firm and solid, when cut into, presenting an appearance more like that of the liver. In one case in which the fever went on to a considerable length without any material disturbance of the sensorial functions, but with a relaxed state of bowels, great disrelish for nutriment, restlessness, and quick pulse, with partial flushes on the countenance, small ulcerations with slightly elevated edges were found in the villous coat of the small intestines, the eye being directed to their situation by the appearance of brownish stains in the peritoneal coat, to which the ulcerations had penetrated. In two other cases, indeed, of the character first mentioned, in which the functions of the sensorium were principally disturbed, and no symptom of unusual derangement in those of the bowels had appeared, except a very offensive condition of the motions, ulcerations were also found in the villous coat of the small intestines, but without any elevated margin. Is it possible, that such appearances in the internal lining of the bowels may be produced after death by putrefaction, or by the action of their acrid contents?

SECTION IV.

METHOD OF TREATMENT.

Although the different hypotheses which have successively prevailed in the medical schools of modern times, have materially influenced the practice of medicine in general, and the treatment of fever in particular; yet, on the whole, less variation has been produced in the latter than might have been expected, from the frequent changes which these hypotheses have undergone with the successive advances in physical science. It was long ago justly observed, however, "Nihil istas cogitationes ad medicinam pertinere, eò quoque disci, quod qui diversa de his senserint, ad eandem tamen sanitatem homines perduxerint." And accordingly the advocates of the humoral pathology, intent upon the proper concoction of the peccant matter, and employing their hot alexipharmics;—the adherents of the chemical school, fearful of the advances of putrescency, and pouring in their antiseptics;—and the Brunonians again, in their terror of

asthenia, pushing their stimulants to the utmost;—have concurred in giving sanction to a hot and cordial treatment of fever, in disparagement of that sage Hippocratic maxim, *Contraria contrariis medentur*, and with the effect of having fixed an impression which at this day is but too manifest, not only in the popular feelings and prejudices, but in the minds of the mass of medical practitioners, unfavourable to the cool and antiphlogistic management of this disease. That this impression exists in considerable force in a multitude of practitioners, is evident from the resort which is so frequently witnessed, even in the early stage of fever, to the camphor mixture, cordial confection and æther, and the subsequent use of bark and wine; from the disinclination to bloodletting and free purgation, and to the external and internal use of cold liquids; and from the heat of apartments in which patients are permitted to be confined. That the impression is still more strongly fixed in the popular mind, the difficulty which every attempt to introduce coolness in any shape, whether in the drink or the bed-clothes, or in the use of cold washing, or the admis-

sion of fresh air, will sufficiently demonstrate.

I am aware, indeed, that much has already been done, by the publications of several able pathologists*, to diminish the influence of this prejudice of the schools: and that the more recent works on fever, by the intelligent authors before mentioned, and others†, have successively contributed their aid to the accomplishment of the same end. Nevertheless, much remains to be done; and no effort, however feeble, can be deemed entirely useless towards the furtherance of such a work; in which much is to be accomplished by the repeated though

* I allude especially to the admirable works of Dr. Haygarth, on the importance and efficacy of free ventilation; of Dr. Currie, on the beneficial effects of cold water; and of Dr. Hamilton, on the advantages of free purgation; all of which have contributed greatly to the improvement of the treatment of fever, and to the establishment of more rational notions respecting febrile diseases.

† The learned and ingenious essay of Dr. Clutterbuck, though it may have failed to establish the doctrine, that fever essentially consists in inflammation of the brain, has had a beneficial practical tendency; and the concurring testimony of Drs. Burnet, Irvine, &c. respecting the fevers abroad, with those of Drs. Mills, Stoker, Armstrong, Percival, &c. at home, is conducive to the same object.

almost imperceptible operations of individual labour:

"Gutta cavat lapidem non vi, sed sæpe cadendo."

Whatever differences of opinion may exist, as to the presence or absence of inflammation at the commencement of fever, experience has fully decided, that the occurrence of more or less of inflammatory excitement, general and local, in the course of its subsequent progress, is the chief object of apprehension and the great source of danger; and that the only practicable means of anticipating this event, or of speedily abridging the term of the disease, are such as enable us to subdue other inflammatory disorders. The opportunity of administering remedies on the first or second day of fever, while any chilliness continues, and before some degree of excitement has begun, rarely occurs,—never in a public hospital: but the prompt evacuation of the stomach and bowels should be the first expedient under all circumstances. A scruple of ipecacuan is the best emetic: it acts with more certainty also as a purgative, if a grain of tartarized antimony be combined with it: but this is more apt to act violently, and it is better to follow up the ipecac.

by five grains of calomel, with six or eight of jalap. In young persons, where the attack has been very mild, I have seen this prompt evacuation sometimes reduce the fever to a slight febricula of 5 or 6 days. In two cases only,—one in a nurse at the House of Recovery, and the other in a young gentleman, both of whom had gone through a regular attack of fever a few months before*,—this practice put an immediate stop to the febrile symptoms: a purgative alone does not appear to answer the same purpose. An emetic, whether by the direct sympathy between the skin and the stomach in a state of nausea, or by the general stimulus given to the arterial system by the concussion of vomiting, seems to possess some power of equalizing the circulation and determining it to the surface; thus at once relieving the external chill and the internal op-

* These cases, as well as the impunity with which I have observed some persons continue exposed to contagion after a previous fever, induce a supposition that the constitution is rendered somewhat less susceptible of the infection a second time, though not so fully as by the smallpox and scarlatina. A simultaneous attack not more severe, on the brother of the young gentleman in question, was not checked by the same means, and proved fatal.

pression. This effect may be augmented by the use of the pediluvium, or, where it is at hand, the tepid bath; and by the administration of warm diluent drinks.

When the chills are gone, and some heat and dryness of the skin has succeeded, the pulse has become quicker, and beats with a smarter stroke, and the headache and restlessness have increased, indicating the stage of excitement to have come on, more active antiphlogistic measures may still cut short the fever, if they be resorted to on the 3rd, 4th, or 5th, or even on the 6th day. The measures to which I allude, are blood-letting and the cold affusion.

The world is much indebted to the late excellent Dr. Currie, not only for the introduction of so valuable an expedient in the management of fever, as the external use of cold water, but also for the clear exposition of the real sources of occasional danger, upon which the vulgar terrors of it were founded, and for settling upon plain philosophical principles the method of obtaining all its benefits with perfect security. Nevertheless, important as the establishment of this principle in the treat-

ment of fever has been, and extensive as the benefits of its application in the way of ablution are, this remedy has certainly not been found to answer the high expectations that were excited in regard to its efficacy by the first Reports published by its able author; and I believe it has been almost entirely laid aside by most physicians, as well as by myself, who have been induced to substitute the sponge for the bucket or the shower-bath; after having found by repeated trials, that the latter, with all the disadvantages of the inconvenience, fatigue, exposure, and alarm connected with them, produced, in fact, little more than the temporary alleviation of certain symptoms, which followed the use of the sponge, at least after the third or fourth day. In truth, I find, on referring to my journals for 1804 and 1805, that, in the only two cases in which I had an opportunity of using the cold shower-bath so early as the third day of the fever, it not merely failed to arrest the course of the disease, but did not contribute apparently to abridge it; being repeated six or seven times before the preternatural heat finally subsided: after which the disease was

much protracted. Sleep and temporary coolness generally followed the cold affusion, perspiration rarely: so that, in fact, I assert rather upon the authority of others than from my own experience, that it is capable of cutting short fever, even at that early period, at least more frequently than active emetics and purgatives. When it has proved so successful, it has probably been used in the first paroxysm of excitement in simple fever, with great cutaneous heat. But not only during the present epidemic, as I have already stated, but from the year 1804 downwards, as my journals will testify, the cases in which a considerable augmentation of the cutaneous temperature occurred, have not been numerous; and this remedy is not, therefore, like those just mentioned, or blood-letting, capable of very general application.

These remarks, however, are by no means intended to depreciate the value of cold washing in the treatment of fever. At all periods of the disease, but more signally within the first week, whenever the skin is dry and hotter than natural, the face, arms, and trunk, may be sponged with cold water, with or

without the addition of a little vinegar, with considerable advantage. It speedily reduces the temperature of the body, as marked by the thermometer, is extremely grateful to the sensations of the patient, relieving his thirst, and the restlessness occasioned by the irritation of heat, and is not unfrequently followed by a quiet slumber, and gentle perspiration. The morbid heat, indeed, is liable to return, and with it the irritation which it induces; but a repetition of the sponging is followed by the same beneficial changes, and may be resorted to, according to the rule which I have generally given to the nurses, "whenever the skin is hot and dry." Patients, indeed, will often ask for the repetition of this grateful and refreshing operation; and in one instance, a boy, to ensure the most complete enjoyment of the pleasurable sensation, on the return of the heat, seized a jug of water placed by his bedside for drink, and poured it into his bed.

The other active remedy, which I have mentioned as capable of abridging the course of fever, if employed early, is blood-letting. I believe there are few physicians who, like myself, commenced their professional career im-

pressed with the doctrines that prevailed in the schools at the close of the past century, in which the terror of debility was certainly predominant, who will not acknowledge that their subsequent practice has been a continued struggle between the prejudices of education and the staring conviction of opposing facts, which were continually forcing themselves upon their observation; and that they have more especially been compelled to a gradual but material change in their views respecting the use of the lancet, not only in fever, but in other diseases. I am fully conscious of the extent to which my own practice has been cramped by this prejudice, and of the reluctance with which I have admitted the evidence of my senses, till frequent repetitions and the sanction of other authorities had rendered it irresistible. My testimony on this point, therefore, cannot be deemed the result of haste or temerity.

Few opportunities occur among the patients of the House of Recovery, of employing this remedy before the sixth day; but several patients had been bled previous to their admission; in all of whom the headache, had

been removed, or greatly relieved, by the venesection; and though the fever could not be said to be cut short at once, it was always abridged in its duration, and exhibited no unfavourable symptoms during its course. One patient, a girl, whom I directed to be bled after the sixth day, having a very acute headache, exclaimed at my visit on the following morning, that she "had not had an ache or a pain since the bleeding." Of the benefits of small blood-lettings at a later period, I shall have occasion to speak presently. I lately witnessed the complete and immediate extinction of the fever in two cases, not in the House of Recovery, by a single blood-letting: the one performed on the fourth, and the other on the fifth day. The head in both was considerably affected with threatening delirium; but the pain and intellectual disturbance were instantaneously removed; and the patients left their beds in two days. In one of these patients, an attack, marked by precisely the same symptoms, had occurred three years ago, which was not arrested by a free cupping; but the fever went on with severity, and terminated with a formidable derange-

ment of the intellectual functions, and a tedious recovery.

The power of this remedy, at this period of the fever, cannot, I think, be questioned by those who have witnessed its effects; but in such cases it is important to ascertain the circumstances under which it may be necessary to employ it. It is true, that a great majority of the cases of fever, which require our assistance, will pass safely through their course with the ordinary treatment by emetics, purgatives, the saline draught, and cool drinks; and that, in fact, the early symptoms do not in many cases, where the subsequent fever is severe, differ very materially from those which assume a less violent character; the dangerous symptoms in the former cases frequently appearing so late as the 9th, 10th, or 11th days. It seems to me, however, that if on the third or fourth day the headache is acute; or if, without severe headache, there is much watchfulness, a hurry of thought and rapidity of speech, and an unusual sensibility to light, especially if the pulse be 110 or 120; such symptoms mark a condition of the sensorium bordering on in-

flammatory action; and that blood-letting is the most prompt and effectual mode of anticipating the morbid changes which are likely to follow, and which sometimes come on so suddenly, as to inflict an irremediable injury on that delicate organ the brain. This often occurs even by the 9th or 10th day, or sooner; and it too often happens, that no alarm is taken till this unconquerable evil is already produced. A few leeches, or a small cupping, are frequently resorted to under these circumstances; but I have often witnessed the partial relief which they produced, and their failure, even when used early, to prevent the subsequent bad symptoms; and still more entirely to arrest them when they had begun. Very little observation of the comparative efficacy of the emission of even the same small quantity of blood, when taken freely and at once from a well opened vein, and by its slow and more partial exudation from the bites of leeches or under the cupping-glass, will be sufficient to convince any practitioner of the great and decided superiority of the former. I am persuaded that even four ounces of blood taken from a good orifice in the arm, produces

more essential benefit than twice the quantity dribbling away after either of these operations: the venesection is less fatiguing, and the actual loss of power which it occasions is less considerable.

If the early symptoms, however, should not indicate the propriety of resorting to this evacuation, still the same principle must be followed in a minor degree. No appearance of languor or debility should induce a disposition to swerve from a steady pursuit of the antiphlogistic plan, in diet, regimen, and medicine. The frame and physical energies of the patient cannot have been as yet impaired, or even partially exhausted; they have merely sustained a sudden depression, from which they speedily recoil, if the oppressive load of the disease be quickly removed. The bowels should be regularly evacuated daily, or on every alternate day, by means of calomel, with a little jalap or rhubarb, or the sulphate of magnesia. In the simpler forms of fever, rhubarb alone is a useful, mild, and efficient laxative: but in all cases it is well to clear the alvine canal effectually by the occasional addition of three, four, or five grains of calomel. The

saline mixture, containing a couple of drachms of the acetated ammonia, operates itself in some cases as a gentle aperient; and that, or some other neutral saline, should constitute the principal medicinal treatment of fever, if not through its course, at least at the early and middle periods, unless some particular pressing symptom require attention. Whatever the supposed indication of debility may be at this period, the administration of camphor, ethereal fluids, aromatic confection, and every description of cordial or tonic, and more especially the cinchona, should be religiously avoided. These symptoms will be unquestionably aggravated, and cannot be relieved, by such expedients; which, as they augment the morbid excitement, which is in truth the depressing cause, are ill calculated to impart strength. The direct and palpable effect of such medicines is to quicken the pulse, to augment the heat, to increase the thirst, and parch the tongue and fauces, and to aggravate the restlessness; which changes, however, may be easily imputed to the malignity of the disease itself, and considered as its own un-

checked progress, by those who have had no experience of the opposite treatment.

The same cooling system must be pursued in all that relates to the domestic management of the patient, to the state of his apartment and bed, and to the kind and quantity of his drink and nutriment. It is very important to maintain the purity and coolness of the atmosphere in the patient's room. A free ventilation is not only requisite to prevent the accumulation of infection; but contributes, in fact, to support the powers of life, and lessen the febrile depression. I have been sometimes surprised by the vivifying effects of pure air on a poor patient, whom I have had occasion to see at home, in my duties at the Dispensary, previous to his admission into the House of Recovery. Having seen him in the afternoon, in his own close and dirty apartment, in a state of low muttering delirium, with every appearance of great debility; I have found him, on the following morning, scarcely to be recognised as the same individual, with clear intellect, a fuller pulse, and every indication of increased strength, the simple effect of having

passed a night in an airy room and a clean bed, without the administration of any medicine whatever. I have had reason to infer, indeed, as I shall state more at large presently, that the invigorating influence of fresh air, with coolness and cleanliness, is sufficiently great to modify both the character of the disease, and the treatment which it may require or bear*. The full benefits of this important adjuvant in the management of fever, cannot always be obtained in private houses. The popular terror of "*catching cold*," and the habitual closeness of beds and bed-rooms, too common in this country, are considerable bars to the practice of free ventilation. But a conviction of its importance, and of the futility of these terrors, should induce us to urge the full adoption of so important a measure.

In warm or temperate weather, one or more windows should be kept constantly open during the day, and occasionally in the

* See the Reports on the Diseases treated at the Public Dispensary, in the Edinburgh Medical and Surgical Journal.

night, to refresh the atmosphere of the room, guarding the patient of course, especially in the latter case, from strong or partial currents. In cold weather, the door of the room should be kept open, and a window partially opened from time to time, the temperature of the room being equalized by means of a small fire, which also contributes to the more thorough ventilation of the chamber, which is the object of the free admission of air; coolness, and not actual coldness, being the most desirable in such an apartment. The same end is also materially promoted by having no curtains round the bed, and by the lightness of its coverings. The bed-clothes used by a person in health are generally much too heavy for those under a state of fever, as they retain and accumulate the preternatural heat generated by the disease, the excess of which would be dissipated by a more free access of the cool air to the heated body through a lighter covering: and the relief experienced upon such a change is often speedy and manifest. The bed-clothes should be reduced as much as possible, consistent with the feelings of the patient, which are commonly

the best guide in regulating this matter, although a sensation of chilliness is occasionally complained of, when both the hand of the attendant and the thermometer indicate a temperature rather above the natural standard, and even a warm perspiration is present: in which case the load of bed-clothes may be advantageously lightened.

The introduction of camphor, aromatic vinegar, or other fragrant substances, or odoriferous fumigations, into the patient's room, is certainly to be deprecated. These matters have not the smallest influence in destroying contagious or offensive effluvia; they only conceal them, and render us less sensible to their presence: whereas, under a free ventilation, all offensive exhalations are dissipated, and that most grateful condition of the atmosphere of a sick room is produced, in which no odour whatever is perceptible on entering it.

Upon the principle above stated, the drink of the patient should be cold in the summer, and cool in the winter: in the former season, ice or iced fluids are commonly very palatable. Water from the spring is an agreeable beverage in general at all seasons, and is freely

permitted to be used in the House of Recovery. Perhaps it constitutes the best ordinary drink in fever, though it is often rendered more agreeable by a moderate acidulation, with juice of lemons or other fruits, or with crystals of tartar. Rennet whey is often a grateful beverage, and is likewise highly nutritious. The whole nourishment, indeed, during the progress of fever, is necessarily limited to liquid substances, and those principally of a vegetable nature, as the stomach neither demands nor bears any thing more substantial, and is incapable of converting it to the purpose of nutrition. The vegetable mucilages and starches, such as gruel, barley-water, preparations of sago, arrow-root, and rice, with milk, strawberries, and the sub-acid fruits, should constitute the whole apparatus of diet, excluding even the animal broths and jellies, till some indication of the approach of convalescence appear.

In the preceding sketch of the treatment to be pursued in the early stages of fever, I have made no mention of two remedies, one of which at least has been much employed for the cure of this disease: I mean antimony and

opium. In my own early practice in the hospital I used them both often: of late I have seldom prescribed either of them. My knowledge of the remedial powers of antimony, I confess, is rather a matter of tradition, the gratuitous admission of a received opinion, than the conviction of experience: for, excepting its power of exciting sickness, and purging the bowels, in its more active combinations, I have never been able to observe any sensible effect from it in fever. Its diaphoretic power appears to me extremely questionable, unless where it excites nausea; a state certainly not to be desired in this disease. I formerly prescribed a few grains of the antimonial powder nightly, sometimes with an opiate, with the hope of softening the skin, and quieting the restlessness; but I invariably found that the slumbers had been disturbed, and the skin remained as dry as before. I soon became satisfied, indeed, that both these medicines not only failed to produce the expected benefits, but actually contributed to augment the distress which they were intended to relieve. And having found that the liquid preparations of antimony, given with the sa-

line mixture, added nothing to the efficacy of that medicine, but rendered it more liable to disturb the stomach, I at length desisted altogether from its use. Indeed no rational practitioner of the present day looks to the cutaneous transpiration as the means of removing fever, or hopes to alleviate it by any other expedients than those which subdue the general excitement, of the cessation of which the perspiration is to be regarded as a consequence and a symptom, and not as a cause.

With respect to opiates during the early and middle stages of fever, I think the necessity of absolutely rejecting them from the list of remedies cannot be questioned. The only circumstances which could be supposed to indicate their use, would be the restlessness, watchfulness, and aching pains, of which the patients complain incessantly. They not only fail, however, to relieve these distressing symptoms, but they actually increase the disturbance of the sensorium, and the general distress, and at the same time parch the tongue, augment the thirst and heat, and contribute to lock up the alvine discharges, and other excretions. In a word, they are de-

cidedly injurious; and the more so in proportion to the existing excitement, or determination to the head, aggravating, instead of relieving, the very symptoms which they are intended to remedy.

It is at the later periods of fever, in its more severe form, when the symptoms which at once mark its character and its danger develop themselves, that the method of treatment becomes more important, and more difficult of decision. In ordinary cases, this marked aggravation of the symptoms takes place on the 8th or 9th day; but in a few instances so early as the 6th or 7th, and in some as late as the 10th or 12th. It usually consists of some considerable alteration in the functions connected with the sensorium, indicated by a change in the condition of the intellect, the pulse, and the muscular power; and by the state of the tongue. A careful attention to the degree and varieties of this affection of the sensorium, as well as to the age and constitution of the patient, will be the best guide in determining the appropriate treatment.

If delirium have come on, of an active kind,

with rapid and continued talking, or attempts to get out of bed, or with a more quiet confusion and slowness approaching to stupor, with moaning or occasional cries of distress, some evacuation of blood is absolutely necessary, whatever the state of the pulse may be; which, however, though often very compressible, is commonly quick under these circumstances, exceeding 110, and with a smartness in its stroke very perceptible to the tact of an experienced observer, notwithstanding its debility. The temporal artery may be opened with great advantage under these circumstances. But it appears to me, that as great benefit is obtained by taking the same quantity of blood from the arm in the ordinary way,—an operation which every apothecary can readily perform,—while the section of the temporal artery requires considerable dexterity; and the attempt to open it has often failed under my own observation, even when made by practised hands. Six or eight ounces of blood may be sufficient, and the relief obtained by such a moderate evacuation is often speedy and great; after eight or ten leeches have produced but slight, or even no good effect.

Another expedient, which I have sometimes also observed to be successful after leeches have failed, is the application of cloths wetted with cold evaporating fluids to the shaven scalp; an expedient, indeed, which appears to me more effectual in controlling the circulation within the head, than any mode of local blood-letting. Cloths should be dipped in cold water, to which a little æther may be added, to increase the evaporation, and these renewed as they become heated. I have seen tranquillity and sleep succeed to delirium and great restlessness, in the course of a few hours, under this cooling process.

I can speak in very decided terms of the efficacy of a blister, applied at this period of the disease, and under any circumstances of disturbed sensorial function, to the back of the neck close up to the occiput. I have preferred this part to the scalp itself, because the vesication is more prompt and complete, and because it is not incompatible with the more important application of cold just mentioned. In many cases, the slighter degrees of delirium, which occurred principally in the night, accompanied with much restlessness, were at

once removed after the application of a blister to the nucha, and never returned; purgatives being at the same time employed. In very moderate cases indeed, in which the affection of the sensorium is of this slight kind, the application of a blister alone, or that combined with shaving and wetting the crown of the head, will commonly suffice, with the purging and the cooling measures above described, and cure the disease without any more active evacuation.

Even when the sensorial disturbance is inconsiderable, not exceeding a little occasional confusion on waking, or slight wanderings in the night; yet if it be rather on the increase, and if the pulse continue frequent, at or more than 120, with the slightest sharpness in its feeble stroke; if the tongue become parched and brownish, and cannot be steadily protruded; and if the strength be manifestly impaired, the voice feeble, and the skin rather dry,—appearances which are usually considered as indications of lowness and failing powers, —still I do not hesitate to affirm that this condition is to be relieved by moderate evacuations, and will be infallibly aggravated, and car-

ried on into subsultus and muttering, and picking of the bed-clothes, and ultimately to death, by wine and cordial treatment, unless their effects should be counteracted by some extraordinary effort of the system. The apparent debility is, as I have before stated, the result of an oppressing cause, which being removed, the system recovers by its own power; and that this cause is a state approximating to inflammation in the sensorium, the condition of its membranes after death, and the manifest benefits of moderate evacuation, local or general, which I have witnessed, seem to me to prove beyond all dispute. I do not assert that I have seen the disease absolutely arrested in its course at this period (the 10th or 11th day) by these evacuations; for by this time some degree of actual debility has been produced by the loss of the ordinary nutriment, and the exhausting influence of want of sleep, with all the irritations of continued fever; and the congestions, which oppress the vital organs, are already partially established: but the symptoms of great debility have immediately disappeared, or been much diminished; no untoward symptoms have subse-

quently supervened; and the disease has at length terminated well.

I may mention a single case in illustration of this principle. I lately visited in consultation a young lady in the 11th day of a relapse, but in the fifth week of fever, as she had been but a few days in the interim convalescent. At this period she was lying in a state of languor and depression, articulating feebly, and, though then collected, had been rambling and sleepless during the two preceding nights, and complained much of a disturbance in her head. The pulse was nearly 130, small and compressible, but with a sensible wiriness in its beat; and the tongue was parched, and rather brown. A little weak wine had been given. Before my visit, a free epistaxis had spontaneously taken place, which the nurse had busily checked with all expedition: it was remarked by the medical attendant, that previous to this hæmorrhage the tongue was tremulous when protruded, but was ever afterwards shown perfectly steady. Seven ounces of blood were taken from the arm at noon; the wine omitted, and a rhubarb draught, with saline medicines, ordered. At night she was

found in a state of free perspiration, after a quiet sleep of four hours, manifestly improved in strength, speaking in a firmer tone, without any remains of the disturbance of the head; the pulse a few beats slower, but more soft and full; and the tongue moist,—a condition in which it subsequently continued during the slow but regular improvement of a fortnight more, before sufficient strength returned to allow the patient to quit her bed for even a short time.

If the fever have advanced without impediment beyond this period to the end of the third week or later; and the more formidable symptoms have actually appeared, connected with a still further exhaustion of the physical powers, and still more extensive organic disturbance; although a much less efficient operation is to be expected from any measures within the compass of our art, it is nevertheless highly important that our efforts should be directed aright, and should contribute to check and counteract, not to accelerate and augment, the morbid actions, which we cannot entirely control. The supine and helpless condition of the patient; his constant and feeble

mutterings when unspoken to, or when addressed; his dull and sunken eye; his dark and trembling tongue; his starting tendons; and his involuntary evacuations; have all been deemed equally indicative of a great general prostration of the vital powers; and consequently of the necessity of active stimulation, as the sole means of counteracting the tendency to death. Hence, upon the earliest appearance of any of these symptoms, even those practitioners, who have omitted them at an earlier stage of the disease, have very generally resorted to the free use of wine, bark, and other cordials and tonics, as the only effectual remedy for these symptoms. We have even heard of wine being given to the extent of some bottles in the course of the twenty-four hours, or brandy and other still stronger stimuli being superadded. This at least was the Brunonian practice, and has been more or less followed by numbers who were not advocates of that pernicious theory.

Now, although I cannot altogether assent to the doctrine of a recent writer, Dr. Mills, who maintains that the symptoms just mentioned are the result of an inflammatory ac-

tion of the brain and its membranes, which is to be cured by repeated general though small blood-lettings, as in the earlier stages*; still I am persuaded that his view of the subject is an approximation to the truth, the boundaries of which he may have slightly overstepped. There is no condition of fever whatever, with one exception, (a state of collapse in old subjects, the characteristics of which are easily recognised,) in which large potations of wine and the stronger liquors are not extremely deleterious. Nor do I conceive that subsultus, picking of the bedclothes, and a tremulous tongue, are essentially the concomitants of debility, or by any means indications for the use of stimulants; they are distinctly symptomatic of cerebral irritation. Whether that be of a sufficiently inflammatory character to require blood-letting; or whether such an operation can be safely employed, at

* See his Essay on the utility of blood-letting in fever. It is to be regretted, indeed, that a shade of doubt has been thrown over the accuracy of Dr. Mills's general statements, by the proofs of his incorrectness in regard to the mortality adduced by the Committee of the Dublin Fever Hospital. See A Letter to the Managing Committee, &c. Edin. Med. and Surg. Journ. vol. x. p. 358.

least repeated, at a period of the disease in which much actual exhaustion of the physical powers has necessarily been produced, is the question for experience to decide.

I confess that I have not ventured upon general blood-letting under the circumstances above stated; but have seen such constant benefit, that is, such uniform diminution of the twitchings and muttering, and such manifest improvement in the strength of the patient and in the beat of his pulse, from local bleeding, by means of leeches, and from blistering, that I have been led to trust principally to these remedies, more especially as no such benefit followed the use of wine, in any quantity; but, on the contrary, evident aggravation of these symptoms if it were used more freely, without the proper evacuations.

The state of exhaustion, and the subacute character of the inflammation, indicated by the feeble action of the heart and arteries, have led me to the trial of very small quantities of wine, not exceeding four ounces in the twenty-four hours, much diluted; as not incompatible with the remedies for the removal of local inflammatory congestion. It has appeared to

me, however, that this quantity even of diluted stimulus was injurious, and inadmissible, whenever *the tongue remained parched, the skin dry, and the pulse above* 120, *with the slightest perceptible sharpness in its beat* *;

* The pulse has been pronounced, on high classical authority, "fallacissima res:" but I am inclined to question the accuracy of this assertion. In fever especially, it appears to me, that important indications are to be obtained from a careful examination of its various qualities, particularly in regulating the use of stimuli or evacuants. A vigorous stroke is not to be expected in the later stages of fever: and therefore the debility and compressibility of the pulse ought not to mislead us, when the pulsation is not only frequent, but quick or smart, being felt at once under all the fingers, and giving a sensation as if the artery were contracted to the compass of a wire. This may be deemed, especially in conjunction with a parched tongue and skin, an indubitable sign of more or less of organic irritation; and there is, perhaps, no condition of the system, except a state of cerebral irritation, in which such an union of rapidity, debility, and distinctness on account of its sharpness, is ever witnessed. In the case of a boy who died in the House of Recovery several years ago, in whom five ounces of serum were found in the ventricles of the brain, with a slight purulent appearance in the fourth, the pulse was counted on the day of his death, both by his apothecary and myself, first at 190; and four hours afterwards at 250, with the utmost distinctness. In a state of greater debility the pulsation is more fluent, passing like a stream under the fingers, and though small, not contracted, seldom so frequent, or, if so, becoming indistinct.

a combination of symptoms which occurs in the majority of these cases, and which, therefore, limits even this sparing use of the diffusible stimulants within narrow bounds.

There is one condition of fever, however, in which wine and similar stimuli are essentially necessary to the recovery of the patient, and in which they should be used with a liberal though cautious hand: I mean a state of sudden collapse, which occurs principally, but not exclusively, in patients past the meridian of life; and the symptoms of which are sufficiently unequivocal to be distinguished by an attentive observer. The increase of languor and actual debility is very manifest, and is much complained of by the patients; the sense of faintness and sinking, and the oppressive labour of breathing, being extremely distressing. In general they lie supine and motionless; but in one instance, in a middle-aged man brought to the House of Recovery at the end of the third week of fever, this state of collapse commenced with a slight picking of the bed-clothes. The most remarkable circumstances, however, indicating this condition, are observed in the state of the skin,

pulse, and tongue. The skin becomes cool or cold, and generally damp, having a relaxed, chill, and clammy feel, not to be mistaken for the constricted and parched state of the surface, even when cool, connected with irritation, as before described. The tongue, though previously brown and dry, becomes moist, yet remains loaded; and the pulse generally increases in frequency, but is so feeble in its beat, as to give rather the impression of undulation than of a stroke.

These symptoms, then, the failing strength and sinking spirits, the cold and clammy sweats, the laborious respiration, and the feeble wavering pulse, so clearly indicative of the failure of the vital powers, obviously demand a different treatment; and unless stimulants are duly supplied, the patient sinks in no long time. Several of the worn-out paupers, sent to the House of Recovery during the present epidemic, perished, as I have already stated, in this manner: yet some of them, by means of a liberal supply of wine, and cordial medicines, struggled through very untoward circumstances to recovery. One old woman, with a large gangrene on the

sacrum, and an ulcer on the arm, sent in cold and almost senseless, was roused and preserved by these means, especially by a few glasses of gin, which she preferred to wine. In general, however, less than a pint of wine in the twenty-four hours, given in small divided portions frequently, was sufficient for this purpose. Indeed, considerable caution is requisite in the regulation of stimulants under any circumstances, but more especially when the previous depression has been very great. As soon as the full benefit of the stimulation has been obtained, and particularly if any indications of returning excitement are manifest, the stimulants should be immediately diminished, or altogether withdrawn. In the beginning of my practice in the House of Recovery, I received a lesson upon this point, which has left an indelible impression on my mind. I found a middle-aged man, who had been brought in the evening before, in the lowest conceivable state of collapse; in fact, to all appearance *in articulo mortis:* the extremities were cold, the trunk bedewed with cold sweat, the pulse imperceptible at the wrist; in short, a heavy respiration, and some feeble

remains of the power of deglutition, were the principal signs of life. Hopeless as the case appeared, I directed him to be kept warm, and to be supplied, at short intervals, with a teaspoonful of wine, or spirit, æther, &c. as long as he could swallow. To my astonishment, I found him on the following day quite sensible, and loudly demanding food. The skin was warm, the pulse firm, and he had recovered a surprising degree of vigour. Fearful of withdrawing the support of some stimulus from a person whom I had seen the day before at the point of death, I continued his supply of wine: but on the following morning he was delirious; the eyes soon became red and ferrety, his skin hot, the pulse sharp and frequent, and in a few days he died with all the symptoms of phrenitis, terminating in effusion. It is manifest, therefore, that stimulants should be regulated with great caution, even when most essentially required, and according to their present effects.

There is another modification, however, of the symptoms of fever, which was probably not unfrequent in the epidemics of former times,

but which I have never witnessed except in two instances: it so nearly resembles the state of collapse just described, in some of its points, as to induce us to infer that a moderate use of some diffusible stimulant may be necessary. I mean the appearance of large livid blotches on the skin. These ecchymoses, which occurred at the same time, in the month of October last, in two young women under 30, were immediately preceded and accompanied, as I have already stated, by a cold and relaxed state of the skin, by a feeble and very soft pulse, not exceeding 96 or 100, a moist and moderately loaded tongue, and a remarkable degree of stupor, or rather stupidity; for they looked up with intelligence when pushed or shaken, whining and uttering groans of anger on being so roughly moved, and at length answered distinctly under the same compulsion, dropping again into the state of stupor, but uttering frequent loud cries of distress. The most manifest and speedy relief to these symptoms was produced by a daily copious evacuation of the bowels by calomel, a practice which I resorted to, in consequence

of the analogy of this condition with the disease called Purpura hæmorrhagica. In one of these cases the relief preceded the use of wine; the languor and stupor, and the debility of pulse, being greatly diminished after a free purgation; but I was fearful that the powers of the circulation might sink under these appearances of oppression, whilst a little stimulant, not more than four ounces of wine diluted, was given in the twenty-four hours. In a few days these patients were in a state of convalescence, the evacuations from the purgatives being daily copious. Their recovery, however, as I have before observed, was greatly retarded by the sloughing ulcerations which ensued, in the seat of every extensive ecchymosis.

There is still another modification of fever, in which it appears to me that a moderate use of wine is beneficial: I mean, when the disease is protracted by a state of diarrhœa with little affection of the sensorium, but with a frequent, small, and feeble pulse, brown but not very dry tongue, and great languor and debility. The cretaceous mixture, with or without laudanum, has frequently failed to remove the diarrhœa, and the febrile state connected with

it, till five or six ounces of red wine were given daily in small portions, with the drink or liquid nourishment, after which the improvement has sometimes been very speedy.

With respect to the use of wine then, in fever, my own experience has led me to these practical limitations. It is not only beneficial, but necessary, in a state of collapse; and should be administered freely to the extent of a pint daily, somewhat more or less according to circumstances, until its object has been attained; and diminished or subtracted when the smallest indications of over-excitement appear. And it may be more sparingly employed with advantage under a state of great languor, with picking of the bed-clothes and subsultus, and some confusion of thought, *provided the tongue be not parched, the skin be soft and moist, and the pulse open and fluent*, in conjunction with local evacuation;—in the state of torpor which accompanies the appearance of vibices, in union with free purgation;—and in the state of diarrhœa, unaccompanied by tenesmus, or much disturbance of the head. In all other stages and circumstances of the disease, I conceive the

use of any stimulant to be decidedly productive of injury.

I have said nothing respecting the employment of bark, which, from some unaccountable notion of the similarity of its properties to those of wine, has commonly been associated with it in the cure of fever, as well as of other diseases. It is to be wished, however, that this substance were erased for ever from the catalogue of medicines employed for the cure of this disease. In the early part of my practice, agreeably to the doctrine of the times, I resorted to the decoction of cinchona on the first appearance of languor and debility. The increase of the symptoms was easily imputed to the untractable nature of the disease, or deemed the necessary result of its progress; until it became obvious, from the repeated occurrence of the fact, that the tongue, which had been on the day before the administration of the bark, moist, and exhibiting a grey or yellowish mucous fur, was on the following morning dry or even brown; that the skin was hotter or more parched, with a flush in the cheek; that the pulse was quicker and harder; the thirst increased, and

the sleep more disturbed. That these are effects of the cinchona, in the fever which I have had occasion to treat, even when the patient has made some progress towards recovery, so long as any fur continues to whiten the tongue, I have had such manifold proofs, that I have of late scarcely ever prescribed it, even during the state of convalescence; having again and again witnessed a return of headache, with the concomitant symptoms of irritation during that state, on the commencement of the use of this medicine.

It remains for me to say a few words relative to those complications of typhus with an inflammatory affection of one or more of the important organs, to which I have above alluded. With the exception of the phrenetic affection, these inflammations appear to partake more of venous congestion than those which attack the same organs unaccompanied by typhoid fever. This at least seems to be deducible from the appearances of the lungs after death, occasioned by pneumonia conjoined with this disease. In all the cases of this kind which I have examined by dissection, instead of suppuration, a dark liver-like

structure was observed in the parts affected, together with some slight adhesions of the pleura. This circumstance would lead us to expect less benefit from bloodletting in those inflammations, than in the more acute forms, independently of the existence of more or less of cerebral congestion, which belongs to typhus. Accordingly, I have been disappointed as to the expected benefit, which blood-letting promised, from its effect in subduing the general excitement in the earlier periods of more simple typhus. The relief at least has often been of short duration, and the pulse has become more bounding in its beat, though soft, even on a repetition of the evacuations, and the inflammation has only shifted its seat. In those cases, occurring at the later stages of the fever, 8 or 10 leeches have appeared to afford as effectual a relief, either in abdominal or internal inflammations. Some of the internal affections were also much mitigated, and ultimately cured, by leeching and blistering. The bowels must be moderately but regularly evacuated, in these cases, by a little rhubarb, or infusion of senna, with the occasional addition of a few grains

of calomel, if the motions are scanty, or unnatural in their odour and appearance. Wine and cordials, however sparingly administered, appear to aggravate these complicated symptoms, except when their activity has been subdued, and a state approaching to collapse, with moist tongue and soft skin, has ensued; at which time a sparing allowance of wine, diluted, or mixed with the nutriment, becomes grateful and advantageous, as well as safe.

In the course of fever under its simpler forms, some symptoms are occasionally urgent, and require specific attention. Thus I have observed, that vomiting and diarrhœa were not unfrequent, but generally manageable by simple means. The sickness commonly yielded very readily to absorbents; as magnesia taken in peppermint water, in the dose of 10 or 12 grains, three or four times a day; and the diarrhœa generally to the chalk mixture, with or without a few drops of laudanum; and in the more obstinate cases with pale motions, to the Hydrarg. cum creta, and extract of poppy taken at night. The diarrhœa was not relieved by rhubarb or other laxa-

tives, but generally distinctly aggravated by them, unless accompanied by tenesmus, in which case a little calomel with an opiate generally removed it: indeed, it appeared to have been sometimes the result of the purgatives administered, especially of calomel.

As to the management during the state of convalescence, little can be said, for little is necessary to be done. The constitution commonly rallies sufficiently quickly, after the simpler attacks of fever, unaided by medicine; the principal difficulty being to regulate the appetite, both as to the quantity and quality of the food; as any excess or improper selection in that respect was found a common cause of relapse. The returning power in the digestive organs, is in danger of being impeded, rather than promoted, by the interference of tonic medicines; at least I have witnessed that effect many times from the bark. As the tongue remains whitish for some time after the appetite is become considerable, I have generally allowed the patients either to take no medicine at all, except an occasional gentle laxative, if any tendency to constipation (another source of relapse) oc-

curred, and to continue the saline mixture, or to take the diluted sulphuric acid in the infusion of roses. After the more severe attacks of the disease, the constitution recruits more slowly, and the patients sometimes remain long enfeebled: in this case, the aromatic bitters, such as cascarilla, columbo, &c. are preferable as tonics. It is only in the lingering debility, occasioned by gangrenous ulcerations, sloughing sores, or slow suppurations, that the cinchona becomes a valuable remedy.

I had some intention of subjoining a few cases, selected from my journal, to illustrate each modification of the fever, both in its simple and complicated forms; but the consideration that such details are commonly deemed uninteresting, and seldom read, and that they would have added to the bulk of this tract, which I wish to comprise within as narrow limits as possible, has induced me to relinquish that design.

On comparing the method of treatment now adopted for the cure of contagious fever, with the very contrary measures heretofore pursued, it may seem extraordinary that the same disease could ever be viewed in such opposite lights by men of science and observation; and an inference appears necessarily to follow, unfavourable on the whole to the medical art; viz. that if the present practice be correct, the former must have been absolutely and uniformly injurious, if not fatal. Such an inference, however, would be by no means legitimate; for I think it is evident that the character of the fever which our predecessors had to treat, and the condition of their patients, although both in a great measure influenced by, if not principally resulting from, their own proceedings, not only sanctioned but actually required a considerable difference of medical treatment.

It occurred to me indeed, some years ago, in consequence of observing the phænomena of fever, first in the close and heated apartments of private dwellings, and afterwards in the cool and airy wards of the House of Recovery, that the state of the body is so mate-

rially modified by these external circumstances, as greatly to change the influence of remedies upon it: and I stated in one of my Reports on the Diseases of London*, "that the constitution, under a state of acute fever, appears to be elevated to a certain degree of excitement, by the salutary stimulus of pure cool air; and, in that condition, is easily acted upon by moderate internal stimulants; insomuch that the slightest cordial, whether in diet or medicine, readily increases the febrile state, whilst the strictest adherence to the antiphlogistic plan is necessary to reduce its violence, and to prevent the occurrence of untoward symptoms. But on the contrary, when the patient is depressed by the influence of a close and stifling atmosphere, and melting under a load of bed-clothes, imbued with his own excreted fluids, he is not only incapable of being roused to extraordinary excitement by moderate stimulants, but absolutely requires them to prevent him from sinking under the depression in which these surrounding circumstances plunge him; and it is extraordinary to what an extreme degree

* See Edin. Med. and Surg. Journal, No. xxxiii. p. 121.

of lowness the operation of the mildest laxative, or any other debilitating cause, reduces him."

If this observation be correct, the cordial treatment formerly adopted was rendered in some measure necessary, and even salutary, by the artificial condition of the patient, and the regimen enforced: and we cannot wonder that even the most intelligent practitioners, who saw the disease only under such circumstances, though originating with themselves, should be convinced of the benefits of stimulants, and entertain strong apprehensions of the danger of the debilitating operations even of gentle purgatives. Mr. White of Manchester, who in the early part of his practice witnessed the adoption of this hot and stifling treatment in the management of puerperal women, and who has given a striking account of its depressing effects, affirms that actual faintings were not unfrequently produced by one or two evacuations of the bowels, occasioned by a glyster, or even by the natural efforts of the intestines*.

* See his Essay on the Management of Lying-in Women, chap. ii.

This view of the subject, then, affords an apology for the mode of treatment formerly pursued, as it shows that it was in some measure an induction from observation and experience. It is not so easy, however, to find an excuse for the long-continued adherence to that mischievous heating system which called for this counteracting stimulation; which originated exclusively from hypothesis; which was in entire opposition to the natural instincts of the sick, and the dictates of reason; and which had been refuted by our great countryman Sydenham a century and a half ago. For it is manifest that, with all the counteracting aid of cordials and stimulants, it must have greatly augmented the fatality of fever; and doubtless contributed much to give it that character of malignity, which happily is almost unknown in our own times; insomuch that it has been the subject of considerable dispute, whether the fevers now prevailing belong to the same class.

This view of the subject, in fact, enables us more fully to explain the change in the general character of contagious fever, which is ma-

nifestly referable, partly to the abstraction of the depressing causes of heat, and the impurities of accumulating animal excretions, but principally to the direct influence of pure air in exciting and supporting the animal powers. When we consider the great and striking changes which, as I have stated in a former part of this work, and in the Report just referred to, have been often observed in individuals in a few hours after their removal to the House of Recovery, it will be easy to comprehend how the whole character of an epidemic must be altered by a general improvement in respect to ventilation and cleanliness.

If this view of the subject be just, however, the continuance of the cordial treatment, at present, after the practice of ventilation has been pretty generally introduced, and the humoral doctrines, which led to the heating plan, have been exploded, must be more decidedly pernicious.

SECTION V.

CONTAGION.

No apology can be necessary for addressing a few observations on this subject to the public at present. For, notwithstanding the ample elucidation which it has received, in common with every other object of scientific research, from the inquiring spirit of the present age, and the exertions which have been made by a few medical philosophers and philanthropists to put the public in possession of the knowledge acquired*, the most erroneous notions generally prevail, even among persons of every degree, relative to the nature and pro-

* I allude especially to the valuable works of the venerable Dr. Haygarth, whose researches upon this subject have conferred a much higher benefit on the country than the discovery of a fumigation, for which a national reward was granted;—to the important Collections of Dr. Clarke, &c.: and to the publications of the Society for bettering the Condition of the Poor.

pagation of contagion. It is believed to be a poison, capable of floating through the atmosphere, around the dwellings of the infected, or the hospitals which contain them, and thus to contaminate the very air that we breathe, and spread disease and death to those who pass by, and even to the neighbouring districts: whence many persons have expressed apprehensions of danger, or been deterred from visiting this metropolis and other towns during the present epidemic season; and many residents have carefully shunned any approach to, and made long circuits to avoid the parishes of St. Giles and Whitechapel, in some of the alleys of which a few persons were known to have been affected with fever. Numberless proofs of the general prevalence of this terror of contagion might be quoted; but the fact is too notorious to require further illustration.

To one acquainted with the evidence which has been adduced relative to the properties of contagion, these opinions, and the terrors connected with them, appear equally unfounded and absurd, as are all the creations of an over-

excited imagination, magnified by prejudice and alarm. For it has been proved beyond the possibility of a doubt, by the concurrent testimony of a multitude of the ablest practitioners, who have had every opportunity of investigating the fact, and by all the experience which the establishment of Fever-Wards and Houses of Recovery has afforded the means of accumulating, that no contagion whatever is communicable, even to the distance of a few feet, through the medium of the free and open atmosphere, and consequently that residence in a district where fever prevails is free from all danger. Nay, it has been further proved, on the same undeniable evidence, that the house, and even the apartment, occupied by the sick, may be rendered perfectly innocuous, the contagion being easily disarmed of its virulence and activity by dilution with pure air, and other means of preventing its accumulation.

It has been maintained by some writers, indeed, that Typhus is not propagated by contagion, properly so called, but by the impurities of the air confined about the persons of the

sick. Thus, Dr. Bayley (an American physician) has proposed to denominate this agent, *infection*, to distinguish it from the specific matter secreted in small-pox, chicken-pox, measles, and scarlet-fever, which appears to be the sole cause of the generation of these fevers, and which, he affirms, will excite them in persons predisposed to receive the contagion, in the purest atmosphere*. A similar opinion has been promulgated by a physician of our own country, the late Dr. Adams, who considered Typhus, the plague, &c. not as *contagious* diseases, but diseases of *infectious* atmosphere†. The grounds upon which this opinion was founded, are, that wherever people are crowded together in great numbers in close situations, as in ships, jails, and hospitals, even where no disease pre-existed, the air becomes vitiated, or, as he incorrectly expresses it, "a new kind of air is generated," and fever spreads among the inmates: but that the most malignant fevers, even the

* See Dr. Hossack's Letter to Dr. Chisholm. Edin. Med. and Surg. Journ. vol. v. p. 427.

† See his Observations on the Laws of Epidemics.

plague itself, have not been communicated to others, where the persons so infected have been removed into other situations. Thus, the fatal fever affecting the persons exposed to the infection at the Black Assizes at Oxford in 1577, and at the Old Bailey in the year 1750, was not communicated among the families of the sick; and the plague was not carried by persons removed while under its attack to the villages in the vicinity of London.

The difference appears to be merely verbal: for the effluvia which propagate typhus do not generate any other disease, as the plague, or dysentery; or *vice versâ*: they differ only from the specific contagions, therefore, in being occasionally produced by the human body not already in a state of fever; and in their minor degree of virulence, requiring concentration and accumulation to become the exciting cause of fever. But the fact may be considered as an additional proof of the error of the popular opinion above alluded to, and as a clear indication of the practical means by which the disease is to be disarmed of its infectious influence.

It will be necessary, however, to adduce some of the evidence, from which it is proved incontrovertibly that all pestilence is propagated by a near approach to the diseased, or actual contact, or by the conveyance of the contagious poison in articles impregnated with it, not being communicable even to the distance of a few feet through the air.

The following facts show, that even the plague itself is propagated only by such contact, or close approximation. Dr. Patrick Russell, who was in extensive practice at Aleppo for many years, particularly during the plague of 1760, 1761, and 1762, used to administer medicines to great numbers ill of the plague, every day, out of a street window, about 15 feet above the ground, even in June and July; and, being short-sighted, he examined the sores within four feet; yet neither his family, nor any inhabitant of the square where he lived, were infected by the contagion of such a number of pestilential patients: and he affirms, that it never spread in a large house, if communication were prevented. A numerous body of Franks live in Constantinople, and are uniformly preserved from the

plague, by observing a few rules of cleanliness and *separation*, while the Turks die of it in multitudes around them. De Mærtens, author of a History of the Plague at Moscow, 1771, has shown that the contagion was disseminated to a very short distance through the air; a fact which was demonstrated by the success of the measures of the Committee of Physicians appointed by the Empress to attend the sick on that occasion. Dr. De Mærtens justly infers, "Solo ægrorum et rerum infectarum, contactu communicabatur, atque atmosphera contagium non spargebat; sed sanissima semper fuit. Visitando tam prope adstabamus illis, ut sola pedis distantia inter nos et eos sæpe vix remaneret, et absque alia quacunque cautela, quàm quod nec corpus neque vestes aut lectum tangeremus, a peste immunes permanserimus. Linguam propius observando solebam linteum aceto communi imbutum naribus et ori admovere*."

In addition to these testimonies, we have the evidence of direct experiment, instituted by an intelligent professor of the College of

* See his Hist. Pest. Moscuens.

Lyons, Dr. O'Ryan, relative to a contagion believed to be, both in its origin and propagation, independent of any impurity of the atmosphere, and scarcely less virulent than that of the plague itself: I mean the small-pox. He proved by repeated trials, that this contagion is not capable of infecting any individual at a distance of more than two feet, through the medium of the air. He placed several children round an oval table, the least diameter of which was three feet, in the centre of which were dossils of lint and silk, strongly imbued with variolous matter, sometimes taken from the natural and sometimes from the inoculated disease. This exposure was repeated every morning and evening for a week, sometimes in the open air, and sometimes in an apartment; but the children remained free from the disease for the space of nine months. Dr. O'Ryan afterwards placed four children, properly prepared, within two feet of a child inoculated with the small-pox, for the space of one hour daily for a fortnight. None of them took the disease, but went through it mildly two months afterwards from inoculation*.

* See his Diss. sur les Fièvres.

With respect to the infection of common fever, that able and learned physician, Dr. Lind, in whose valuable writings the first dawnings of those rational principles, which have been subsequently established, were visible, unequivocally stated his conviction, that contagion will not pass to the distance of many feet through the air, but is communicated by close approach to the sick, or by *fomites*; i. e. substances imbued with the contagion*. The ample field of observation which was before him in the great naval hospital at Hasler, as well as on ship-board, could not fail to bring this truth to his philosophic mind. But, as I have already stated, we are indebted to the ingenuity of Dr. Haygarth, formerly of Chester, now of Bath, for a clear development of this principle, and for its practical application in those valuable institutions, Fever-Wards and Houses of Recovery, which have afforded the most ample corroboration of its truth.

The fever-wards in the Chester Infirmary, which were the first establishments upon this

* See his Essay on Fevers and Infection.

principle, and instituted by Dr. Haygarth, are situated within thirteen yards of some other wards of the building; yet during a space of above twelve years, the contagion of fever was never known to extend itself from thence. Dr. Currie also relates, in a letter to Dr. Clark of Newcastle, that contagious fever had not, during ten years, extended itself, in any one instance, from the fever-wards, either in the Liverpool Infirmary or in the workhouse, although the latter has sometimes contained 1400 persons *. Dr. Ferrier affirms, that so far from any contagion having been disseminated from the House of Recovery, which was erected at Manchester in a crowded and much infected part of the town, the district immediately surrounding that establishment was the first which was cleared of the fever. The evidence afforded by the London House of Recovery is equally decisive. The original establishment was a small private house, fitted up for the purpose, standing in a row, in contact with thin and slender-built houses on both sides. During fourteen years

* See Dr. Clark's Collection of Papers, reprinted in his Med. Hist. and Reflections.

its wards were generally more or less occupied by patients in fever; yet not only did the families inhabiting the adjoining houses escape infection, but no fever was known to have occurred in its vicinity. If contagion could be conveyed even a few feet through the air, the open windows of the adjoining houses must have admitted it.

Perhaps no further evidence is requisite to demonstrate the non-conveyance of infection even to the smallest distance, in a pure atmosphere. But I may add one fact ascertained by sixteen years experience in the London House of Recovery, in corroboration of the same conclusion. It is generally admitted, and we may quote the high authority of Dr. Lind in proof of the opinion, that "the body of the diseased kept neat and clean, is not so liable to impress the taint, as his late wearing apparel, dirty linen, or any uncleanliness, long kept in that impure state;—these last contain a more certain, more concentrated, and more contagious poison than the newly emitted effluvia or excretions from the sick *." All the

* On Fevers and Infections.

patients admitted into the London House of Recovery, are transported in a litter by two men employed by the institution, enveloped in their uncleanly and tainted apparel. Yet the porters, who have been daily occupied for the last eighteen months in conveying this double source of contagion, often the distance of two or three miles, and assisting them in and out of the litter, have never received the infection. Neither have the washerwomen employed during the whole period of my attendance on the House of Recovery, occupied almost constantly in washing the apparel brought in by the patients, as well as the bed-linen, often much soiled by their excretions, and the cloths used by the patients in the House, ever been affected with the fever.

It is manifest, then, that the popular opinions and fears are altogether unfounded; and that infection cannot be caught in the open air, even by a close approximation to the most tainted sources of it, the uncleansed person and contaminated apparel of the sick: in short, that to be rendered communicable, it must be condensed and accumulated in a confined and unchanged atmosphere; or in the apparel, or

bedding, which has been long in contact with the patient. Under these circumstances, indeed, it becomes sufficiently virulent to inflict disease on any one, at all predisposed to receive it, who comes in contact, or remains long enough in that situation to inhale, or imbibe through the cutaneous absorbents, a sufficient dose of the poison. It must be equally manifest, however, that the means of security even from this hazard are completely within our power; for, to prevent the accumulation and concentration of the virus, is necessarily to disarm it of its deleterious agency. This may be fully accomplished, as experience has now decided, by a free and regular ventilation of the apartment in which the patient is confined, by a frequent change of the bed and body linen, and ablution of the skin, and by the speedy removal of all the excretions. Where these principles are steadily pursued in detail, the most malignant fever may exist in the very bosom of a family, without extending to another individual; of which numberless examples might be adduced.

It seems scarcely necessary to dilate upon

the practical execution of principles so clear and simple as those just stated. Dr. Haygarth has proposed some rules for this purpose, to which little can be added, and of which the following is the substance. The door of an apartment, in which a patient lies ill of fever, more especially in small houses, should be kept always open, and the window or windows likewise in warm or temperate weather during the day, and occasionally during the night. At all seasons indeed, however cold, the occasional refreshment of the air of the apartment, by an open window, even during the night, is proper. For the same reason, the curtains should not be drawn round the bed, except a part sufficient to shade the patient's eyes from the light. Visitors and attendants should also avoid the direct current of his breath, or the exhalations from his body, or from his evacuations; or, if obliged to come into close contact with them, should maintain a temporary suspension of the breath. The linen of the patient's person and bed should be frequently changed; that which is removed immersed immediately in cold water, and af-

terwards washed; and all the discharges should be speedily removed.

If these simple measures are steadily pursued, no confinement or accumulation of morbid effluvia can take place, under any state of fever; and the air of the apartment may be breathed, and the bed and person of the patient approached and touched, with perfect impunity. If this were not the case, indeed, physicians and nurses, especially those employed in fever-hospitals, would have little security for their lives. During the fourteen years in the course of which I have almost daily been in contact with persons labouring under contagious fever, not only myself, but all the nurses have been thus preserved from infection, with one exception, down to the period of the present epidemic*. In the instance ex-

* It is no disparagement to the system above described, that some of the nurses and the matron of the House of Recovery have been infected during the present epidemic, which has kept the wards constantly full. The impossibility of maintaining a free ventilation night and day during the cold weather; their perpetual exposure, in close contact, to the breath and discharges of the patients, while feeding, moving, or washing them, changing their beds and linen,

cepted, a nurse imprudently slept in a bed just quitted by a convalescent, without changing the linen.

Ventilation and cleanliness alone, therefore, are adequate to the effectual prevention of the propagation of infection in any dwelling; and the freshness, and freedom from all sensible taint, which they produce in the atmosphere of a room, is the best test of the absence of all noxious matters. The use of camphor, tobacco, rosemary, odoriferous pastils, and even of vinegar, is to be deprecated, as I have already hinted, inasmuch as they are totally useless, and might conceal the presence of deleterious effluvia. The vapours of vinegar *, indeed, may possess some feeble power, of destroy-

and even stripping off their infected clothes on admission, might be sufficient to counteract the salutary operation of any general system, however efficacious. But the truth is, that the ventilation of the House of Recovery has been very imperfect, and even at the command of the nurses and patients; and the injurious consequences of this imperfection have become so manifest, that the subject is now under the consideration of the Committee while this work is in the press.

* It appears from some experiments of an ingenious French chemist, M. Guyton Morveau, relative to the efficacy of various substances in destroying contagion, that

ing contagion, as well as those of sulphur; which, however, are not respirable. But the only substances which distinctly decompose and destroy contagion, and which therefore may be resorted to with a view to purify portions of the atmosphere which ventilation may fail to reach, or substances which cannot be washed, are the vapours of the mineral acids, of which I shall have occasion to speak more particularly presently.

The preceding observations relate especially to the security of individuals during a season of epidemic fever. It has been shown, that no person incurs any risk in the open air, and that the danger is almost annihilated, when the means of perfect ventilation and cleanliness are at command; and individual security constitutes in the aggregate the security of the public at large. But fever spreads, it will be said, and contagion is actively propagating the calamity in this metropolis, and still more extensively in the towns and cities of the sister kingdom. And doubt-

the vapour of vinegar, and especially of the acetic acid, or aromatic vinegar, is possessed of that power in a slight degree; but that its operation is limited to a small space, &c.

less it will continue to spread, whenever its exciting causes recur, as long as poverty and vice continue to render the abodes of a great portion of the community receptacles for every thing that is unwholesome; and until the police shall direct more attention to the cleansing and ventilating the wretched alleys and lanes, which are, even in this metropolis, in an extremely offensive condition. But the principles to be pursued, in arresting and mitigating the ravages of an epidemic contagion, are clear and unequivocal; and it is doubtless to the superiority of the general habits and œconomy of this country, and to the more universal application of these principles even among the lowest ranks, that we owe the comparative mildness and rarity of the calamity, which the wretched habitations and filthy habits of the same class in the sister kingdom have lately so much aggravated in that country. It is among the poor and uncleanly that epidemic pestilence principally spreads, and always begins. The latest plagues in London commenced in St. Giles's and Whitechapel, in which last district the present epidemic was first noticed.

As contagion can only be propagated by

respiring a tainted and confined atmosphere, near the person of the sick, or by contact with fomites, *i.e.* with clothes or other substances strongly imbued with concentrated contagious matter, and is even rendered inert by dilution with the external atmosphere, the means formerly resorted to for the suppression of epidemics must have been actually pernicious. The order to shut up immediately all infected houses, and to exclude communication with the external air, must have been fatally injurious both to inmates and visitors, and have greatly contributed to extend the evil. Another practice of very ancient origin, suggested by the notion that the seeds of pestilence were disseminated in the air, viz. the lighting of fires in the public streets, must have been also very pernicious, especially as the worst epidemics of Europe have been most prevalent in the autumnal season; when any augmentation of the natural heat must have been extremely deleterious*. The obvious means to be pursued on

* There is too much evidence, indeed, of the injurious effects of this practice, to render any theoretical objections to a repetition of the experiment necessary. Hippocrates and Acron, of Agrigentum, believing the air to be the me-

such occasions, consist in preventing the accumulation and confinement of the contagious effluvia in the habitations where they are generated, and in purifying those apartments, and

dium of infection, are said to have ordered large piles of wood to be burnt in the streets and infected parts of Athens, and thus to have stayed the plague in that city. (See Aëtius, *Tetrabib.* and Plutarch, *de Isid. et Osir.*) But in modern times the experiment has not been successful. In the year 1721, the plague raged at Toulon with such violence, that in the space of ten months it destroyed about two-thirds of the inhabitants. Many having insisted upon fires being made in different parts of the city, the public records were consulted; and it was there found, that on a similar occasion the same means had been tried without success. The experiment however was repeated. Wood was laid before every house, and at the sound of a bell all the fires were lighted; by which the city was involved in a thick smoke for nearly a whole day. The plague, however, suffered no abatement. The same measure was resorted to both at Marseilles and London, when the plague raged in those cities, with no better success. On the contrary, after the fires had been kept burning for three days in London, on the night which succeeded, no less than 4000 died, although not more than 1200 had been destroyed during the preceding three or four weeks (see Wilson on Feb. Dis. vol. i. p. 464). And at Marseilles, the historian observes, this smoke augmented the natural heat of the climate and season, and seemed to increase the activity of the contagion. (See Papon, de la Peste, &c. tom. i. page 234.)

the various articles of bedding, clothing, and furniture, which may have already been contaminated. The most effectual mode of accomplishing this object, is the establishment of a House of Recovery, or of separate wards in hospitals and workhouses, or of some other temporary dwelling, where these institutions do not exist, to which infected persons should be immediately removed; and their own habitation, or apartment, should then be well ventilated, washed, and the walls and ceiling, when that can be done, washed with hot lime. The bedding and the apparel left behind should be washed; and the process of fumigation should also be employed in the apartments, with a view to destroy the contagion adhering to the furniture; and those parts of the clothes and bedding which cannot be cleaned by washing, should be exposed to the same process. When contagious fever spreads among the poor, in small places, where no public institutions afford the means of separating the infected, the measures of ventilation, cleanliness, and fumigation, and the restriction, of all intercourse to the necessary attendants, should be enforced as far as practicable.

It is obvious, however, that under such circumstances, the processes of ventilation and cleanliness can generally be but very imperfectly effected. The close and confined situation of their houses, the small and crowded state of their apartments, their few and ill constructed windows*, their scanty supply of clothing, and their helplessness and inability to perform the operations of washing and cleansing, when the family is disabled by disease, and perhaps deserted by their neighbours, contribute to render these processes almost impracticable. Contagion is, therefore, necessarily collected and confined more or less in every thing around them ; and some means of purification, such as fumiga-

* In a letter from Dr. Haygarth, who has lately honoured me with his correspondence on this subject, the following simple and excellent mode of ventilating the apartments of the poor is suggested. He says, " Might not the inhabitants of the poorest cottage be preserved from contagion, by taking out a pane of glass from the top of a window, and replacing it after all danger of fever had ceased? A paper attached by a wafer at the four corners, might cover as much of this opening as the coldness of the season would require, and, occasionally during the night, the whole opening."

tion, the necessity of which I conceive to be entirely superseded by free ventilation and cleanliness, where these can be fully employed, becomes a valuable adjuvant in arresting the progress of the infection.

Various means have been resorted to, for the purpose of destroying the taint, both of confined air and infected apparel, &c.

The vapours of burning sulphur have been generally employed, with a view to destroy the matter of contagion. This vapour is the sulphureous acid gas, or volatile vitriolic acid of the old chemists, and its efficacy in the destruction of contagion has been long established; but as even in small quantity it affects the respiration, and in larger quantity will occasion suffocation and death, it can only be employed for fumigating clothes, furniture, or empty apartments, to the individual parts of which the fumes can be directly applied*.

* As these and some other observations contained in this section may be found under the heads CONTAGION and FUMIGATION in Dr. Rees's Cyclopedia, I think it necessary to state, in order to avoid the charge of plagiarism, that these articles were compiled by myself.

The vapour of the aromatic vinegar, as I have already stated on the authority of M. Guyton Morveau, is limited in its operation to a very small space; and therefore, although it may be somewhat useful to the persons who are compelled to be much about the sick, it is altogether inadequate to the purification of large rooms, or of infected apparel. And when the fumes of vinegar are attempted to be obtained by throwing it on burning coals, the greater part of the acid is decomposed, and therefore its efficacy is in a great measure lost. The use of all odoriferous, balsamic, and resinous substances has been entirely proscribed by general experience; and M. Guyton Morveau has completely demonstrated their inefficacy by various direct experiments. By burning benzoin, &c. and by evaporating solutions of this resin, and of the balsam of Peru, of styrax, camphor, and myrrh, he found that the odour of these substances was only mixed with that of the putrid matter; and however predominant it was, it did not prevent him from discerning the presence of the putrid air by an exces-

sively disagreeable faint smell *. The same observation is applicable to the vapour of tar, which Dr. Lind imagined was possessed of some efficacy.

Under these circumstances, it is fortunate that, among the many valuable discoveries of modern chemistry, some agents, for the decomposition and destruction of contagious and putrid animal effluvia, have been brought to light. Two of the mineral acids, which are capable of being converted into vapour, and which are also respirable in that state when mixed with the atmosphere of a room, appear to possess that property; viz. the nitric and muriatic acids. Such evidence, indeed, of the efficacy of the former was laid before Parliament by Dr. Carmichael Smyth in the year 1795, as to induce that body to vote him a public reward; and it has been corroborated by the subsequent experience of other naval officers, and that of Physicians of Houses of Recovery in various parts of the united kingdom. Dr. Smyth's expe-

* See Traité des Moyens de disinfecter l'Air.

riments were made first in the Union, a hospital ship, and afterwards in part of the Russian squadron at Sheerness; and the success in both cases was complete. The immediate effect of the fumigation was to destroy the offensive smell arising from so many sick crowded together: none of the attendants were afterwards attacked with the fever; and the general state of the ship was speedily improved*.

A similar demonstration of the efficacy of the muriatic acid vapour had been published by the distinguished French chemist to whom I have already referred, so early as the year 1773. A church in the city of Dijon had been rendered useless, and was shut up, in consequence of its extremely offensive condition, occasioned by the opening of some vaults within it. He filled the church with the vapours of this acid, and the experiment succeeded completely: the tainted air, before intolerable to respiration, was entirely deprived of its offensive qualities†. M. Mor-

* See Reports of the Experiments, &c. by Mr. A. Menzies.

† This does not appear to have been the only anticipa-

veau, however, considers the oxy-muriatic acid vapour as the most effectual destroyer of contagion. But Dr. Smyth was led to reject this acid, from a notion that it was not respirable, and therefore could not be employed in inhabited apartments. Both the experiments of Morveau, however, and of Mr. Cruickshanks of Woolwich, have shown the safety and practicability of using this acid gas in fumigation*.

M. Morveau gives the following formula for obtaining this gas extemporaneously, the ordinary mode of preparation being tedious. If about $2\frac{1}{2}$ ounces of the nitro-muriatic acid are poured upon a drachm of the oxide of

tion of Dr. Smyth's discovery. For Dr. John Johnstone of Birmingham has shown, that his father had employed the vapour of muriatic acid in an epidemic fever at Kidderminster in the year 1756, and recommended it in "An historical Dissertation" concerning that epidemic published in 1758. (See a pamphlet entitled "Account of the Discovery of the Mineral Acid in a State of Gas to destroy Contagion," 1803. Also, a "Reply to Dr. J. C. Smyth, &c." 1805.) It is not improbable, however, that these three individuals may have been equally unassisted in the discovery; and, at all events, Dr. Smyth appears to have been the first to employ the nitric acid, which has the advantage of being more easily respirable than the muriatic.

* See Rollo on Diabetes.

manganese in a four-ounce bottle, the vapour will be immediately disengaged in a considerable degree of intensity.

The simplest and best mode of fumigation, however, consists in the decomposition of the nitrate of potass (common nitre) by means of the sulphuric acid (or the oil of vitriol of the shops). Dr. C. Smyth recommended the application of heat, with a view to extricate the acid vapours more copiously; but it was justly remarked by Dr. Odier of Geneva, that it is extremely difficult to avoid the extrication of the red fumes of *nitrous* acid, which are very disagreeable to respiration; and that by mixing the ingredients cold, an equal quantity of the vapours of nitric acid was obtained. Accordingly, this method has been constantly pursued by the London Fever Institution, and the following formula has been adopted for the fumigation of small apartments: "Take equal quantities (about 6 drachms) of powdered nitre and strong vitriolic acid (oil of vitriol); mix them in a teacup, stirring them occasionally with a tobacco-pipe or piece of glass; the cup must be removed from time to time to different

parts of the room, and the fumes will continue to arise for several hours. The oil of vitriol must be taken by measure, not by weight."

If common salt be used instead of the nitre, the vapours of the muriatic acid will arise in like manner; but as they are more offensive to the respiration than the vapours of the nitric acid, this mode of fumigation is less eligible.

It may be observed, by way of caution, in the use of these acid vapours, that all articles of steel should be removed, or effectually covered, during their employment, as such articles will become speedily coated with rust.

The operation of heat alone appears to be capable of destroying contagious matter; whence, baking, or inclosing in an oven, clothes and other articles impregnated with it, has been recommended. Dr. Lind, indeed, has asserted from his own experience, that the simple heat of a *close confined* fire, or the heat of an oven, is a destroying power which "no infection whatever can resist."

The efficacy of the combined measures above recommended, in destroying and arresting the progress of contagion, has, I con-

ceive, been fully established by the experience of sixteen years in the practicee of the Institution for the cure and prevention of contagious fever in the metropolis, which I have superintended nearly from its commencement. The annual Reports, published by the Committee of that Institution, contain ample evidence of this fact; and I shall conclude my remarks upon this subject by one or two references to them, by way of illustration, together with a general statement of the result of my own observations.

Before the establishment of this Institution, it was well known to the physicians of Dispensaries, and other medical practitioners who were accustomed to visit the poor, that contagious fever, when once introduced into a house or alley, continued to commit its ravages for a long period of time, not only attacking the same individuals again and again, but even the successive occupants of the same dwellings*. Some instances of this sort occurred under my own observation, in the courts about Shoe Lane and Gray's-inn Lane,

* See Dr. Willan's Reports on Dis. London.

in the course of my attendance at the Public Dispensary towards the end of the year 1801, and in the beginning of 1802, previous to the opening of the House of Recovery. After that period no example of this kind occurred; and in several places, where contagion arose and spread rapidly, a speedy termination was put to its course, as soon as the assistance of the Institution was obtained. Thus, it was reported to me in the month of February 1809, that several individuals residing in a close and dirty alley (Spread-Eagle Court) in Gray's-inn Lane had been successively attacked with a fatal disease, not marked by many of the symptoms of low fever, but manifestly communicated by contagion. The offer of cleansing their rooms was made to the inhabitants, and readily accepted. The apartments in which the disease had occurred were therefore lime-washed and fumigated, at the expense of the Institution, and no other instance of the disease afterwards appeared. A still more striking example of the facility and fatality with which fever spreads among the inhabitants of a crowded and close habitation, and of the success with which it may be exterminated by the mea-

sures above described, occurred in the month of October 1812 in the district of Shadwell. A child was taken into the workhouse in Ratcliffe Highway, from a court in the neighbourhood, where fever had been introduced by her mother, who had acted as nurse to a person infected with Typhus. The workhouse at this time was exceedingly crowded, "containing, in fact, 208 persons, where only 150 were intended to be accommodated," as was stated in a letter to me from one of the churchwardens; and the over-proportion consisted principally of children: whence the contagion readily spread in the children's wards, where it was first introduced; and from thence it was soon propagated throughout the workhouse, in which every ward, except one, had been infected, and several persons (including the matron of the house) had died, at the time when application for assistance was first made to the Fever Institution, being only a few weeks from the introduction of the fever. From that instant the paupers of the workhouse were immediately removed to the House of Recovery in Gray's-inn Lane, on the first occurrence of the symptoms of fever: and it is a satisfactory de-

monstration of the advantages of ventilation and extreme cleanliness, that *none of the patients*, so removed, *died*. In the mean time, the superintendants of the parish commenced with great activity a system of general purification throughout the workhouse, according to the directions of myself and the inspector of the Institution, who visited the place. The two workshops were cleansed, and (all work being suspended) were converted into temporary wards, into which the occupants of the workhouse were successively removed, while their wards were scoured, ventilated, lime-washed, and fumigated. Much of the old bedding was replaced by new,—iron bedsteads were substituted for wooden ones,—and the articles not destroyed were exposed to the open air, and otherwise purified. This process was successful; for no adult person in the workhouse, who had not been already infected, was afterwards attacked with fever. About six weeks after this, however, in consequence of the still more crowded state of the children's wards during the winter, (for they slept to the number of six, and in some instances even eight, in each bed, occupying both ends of it,) there was a

slight renewal of the fever among them, and six were sent to the House of Recovery with very slight symptoms of the disease, which did not confine them to bed two days. In the alarm two women were also sent; but they obviously laboured under no other complaint than a common cold or catarrhal fever. With respect to the children, it seemed evident that pure air and cleanliness were the only remedies which they required; for they uniformly began to recover from the moment of their reception into the House: and the adoption of these measures, as far as was practicable in so crowded a habitation as the workhouse, ultimately succeeded in exterminating the contagion there.

The attention of the Fever Institution was also extended to the court in Cock Hill, whence the fever had been introduced into the Shadwell workhouse, the infected houses of which were fumigated by the inspector, and lime-washed under his direction.

The efficacy and value of these measures in this instance will be more evident, when it is recollected how rapidly and fatally this fever spread itself into every ward of the workhouse,

within the short space of a few weeks; and when it is added, that not the least check had been given to the progress of the contagion by the mere removal of a few of the infected persons to the London Hospital; and that the convalescent patients remaining in the house had been almost immediately re-infected, several a second, and some even a third time.

Another instance of similar success occurred in a fever which appeared in the months of October and November 1815, in the vicinity of the workhouse of the parish of St. George, Southwark, which also found its way into that establishment, and would probably have extended much further, had not the measures of prevention been promptly employed. From one house, in a close court in that neighbourhood, eight patients were admitted at once; namely, a family consisting of the father, mother, and five children, and a nurse who had been sent from the workhouse to attend them. They appeared to have suffered much from the want of proper nourishment, and all returned home in good health; and their habitation having been in the mean time purified, they remained free from any subsequent attack of fever,

About the same time the contagion made its way into the workhouse itself; and four patients were successively sent to the House of Recovery from that establishment: but by the means of purification, which were adopted under the direction of the inspector of the Fever Institution, the progress of the contagion was arrested in the workhouse and its vicinity.

During the prevalence of the present epidemic, a very unequivocal proof of the efficacy of the same measures, in arresting the progress of the fever in a particular district, was afforded in the parish of St. Giles. It is somewhat extraordinary, that this resort of poverty, in which even some of the plagues of the metropolis have commenced, remained free from infection during the summer and autumn of the past year, while the fever raged with considerable violence in all the other crowded districts of London and Southwark. In the month of December, the fever first made its appearance in the filthy streets adjoining Dyot Street, where, as might be expected, it spread with extreme rapidity. Two or three or more individuals were sent almost daily to the House of Recovery for nearly a month, by the

parish Apothecary; and the means of purification were employed in the apartments which they had quitted, with so much effect, that at the end of that period very few fresh cases of fever occurred; and that district has subsequently supplied but two or three single cases at considerable intervals.

Several similar instances of the arrest of infectious fever in particular districts, especially in the crowded courts near Saffron Hill and Cow Cross, where the families of the lowest Irish labourers are crowded together with all their native habits of filth and indolence, have occurred since the establishment of the House of Recovery; and the cases in which it has been stopped in single families, although commencing with considerable violence and fatality, are innumerable. In fact, during the whole of this period, no single instance of failure has been known; no person in the family has been subsequently seized with fever; and the disease has never been communicated to the tenants who afterwards occupied the apartments.

On the whole, therefore, I conceive that the most unquestionable evidence has been ad-

duced of the facility of disarming contagion of all its activity, in situations in the least degree favourable to the adoption of the means proposed, and of greatly limiting its influence, and absolutely arresting its progress, even under circumstances which would almost seem to render them impracticable. These considerations should tend to relieve the public from unfounded apprehension of danger, and at the same time induce them to give their most zealous support to those excellent institutions, which are assiduously and effectually employed in mitigating a calamity so fatal to the lives and happiness of a large portion of the community, a calamity which, were no such measures pursued, might extend, as heretofore, far beyond the abodes of poverty.

THE END.



